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This Bibliography contains citations from international literature concerned with snow, ice, permafrost, and frozen ground. The Bibliography has been prepared since 1951 and includes citations to patents, journal articles, conference proceedings, monographs, and translations. This volume is not inclusive to 1988. 50% of the literature is in the Russian language. Additional subject areas include mobility, winter construction, ice navigation, climatology, hydrology, geophysics, and glaciology. The Bibliography is also available through Orbit Search Service, McLean, Virginia, for online searching.

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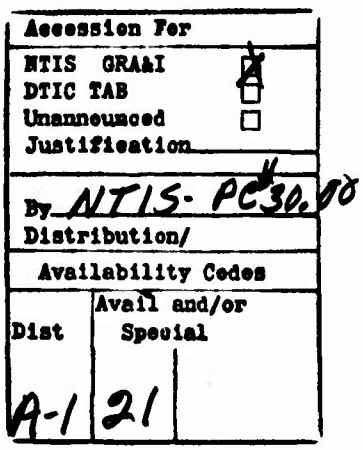
VOLUME 42, 1988

Geza T. Thuronyi, Editor



BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY
Volume 42, 1988

INTRODUCTION

The *Bibliography on Cold Regions Science and Technology* was first published in 1951 and is a continuing publication of the Cold Regions Bibliography Project in the Science and Technology Division of the Library of Congress. It is sponsored by and prepared for the Cold Regions Research and Engineering Laboratory (formerly Snow, Ice and Permafrost Research Establishment) of the U.S. Army Corps of Engineers. Volumes 1-15 were issued as the *Bibliography on Snow, Ice and Permafrost,* SIPRE Report 12. Beginning with volume 16 the designation was changed to CRREL Report 12. With volume 20 the title was changed to *Bibliography on Snow, Ice and Frozen Ground, with Abstracts,* and with volume 23 the current title was adopted.

The present volume contains material accessioned between October 1987 and September 1988. It gives full citations of 4328 items, in many cases with abstracts. The usual author and subject indexes will not be prepared for this volume. Instead, five-year author and subject indexes are being published; these will include volumes 38-42.

This publication is the result of a coordinated effort. The bibliographic work was done by the Cold Regions Bibliography Project Staff who entered all data on a single computerized data base that accommodates both the *Bibliography on Cold Regions Science and Technology* and the *Antarctic Bibliography,* thus eliminating duplication of effort between the two bibliographies. The data processing, based on MARC II input, was handled by the Library's Automated Systems Office and the photocomposition by the Cataloging Distribution Service.

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Geza T. Thuronyi, Head
Cold Regions Bibliography Project
Science and Technology Division
Library of Congress

42-1
Preconditioning of snow to improve trafficability.
Irwin, G.J., et al, International Conference of ISTVS, 9th, Barcelona, Spain, Aug. 31-Sep. 4, 1987. Proceedings, Vol.1, Hanover, NH, International Society for Terrain Vehicle Systems (ISTVS), [1987], p.135-142, 5 refs.
Boonsinsuk, P., Caporuscio, F., Yong, R.N.
Snow compaction, Trafficability, Snow strength, Vehicles, Loads (forces), Snow hardness, Penetration, Tracked vehicles, Experimentation.

42-2
Trailing-tire motion resistance in shallow snow.
Blaisdell, G.L., MP 2248, International Conference of ISTVS, 9th, Barcelona, Spain, Aug. 31-Sep. 4, 1987. Proceedings, Vol.1, Hanover, NH, International Society for Terrain Vehicle Systems (ISTVS), [1987], p.296-304, 6 refs.
Snow strength, Trafficability, Vehicles, Snow cover, Ground thawing, Tires, Snow compaction, Velocity, Tests.
Considerable attention has been given to the subject of motion resistance of tires traveling in virgin snow. Trailing tires (those that follow in the rut of a preceding wheel) are generally assumed to provide negligible motion resistance. Levels of resistance for trailing tires were measured with the CRREL Instrumented Vehicle operating in two snow conditions. Using this vehicle, two methods of measuring trailing tire resistance have been explored. Good agreement was found between the methods. A very different balance of leading-tire to trailing-tire resistance was also found for the two snows. For both snows, it is seen that it is not appropriate to assume that trailing-tire resistance is negligible.

42-3
Velocity of ice streams B and C, Antarctica.
Whillans, I.M., et al, *Journal of geophysical research*, Aug. 10, 1987, 92(B9), p.8895-8902, 16 refs.
Bolzan, J., Shabtaie, S.
Flow rate, Ice volume, Stream flow, Ice sheets, Antarctica—Marie Byrd Land.
The essential difference between ice stream and inland ice and the cause of ice streaming are not known. In order to study these problems, velocities have been measured on and near ice streams B and C by repeated tracking of TRANSIT satellites. The results confirm the difference in mode of flow between fast on ice stream B and slow on the interstream ice ridges. Also as expected, ice stream C is nearly stagnant, which with other evidence of formerly fast flow confirms its recent slowing and current thickening. The drainage of ice stream B has a negative balance equivalent to thinning by 0.15 m/yr over the entire catchment. The lower portion of the ice stream is thickening at about 2 m/yr, but the overall behavior is thinning. This general thinning is probably partly due to progressive extension of the ice stream into inland ice. The transition from inland ice to ice stream seems to occur irregularly both spatially and in time, with rafts of inland ice being carried into the ice stream and slowly incorporated. (Auth.)

42-4
Engineering-geological investigations for construction. [Inzhenerno-geologicheskie issledovaniia dlia stroitel'stva],
Ziangirov, R.S., ed, Moscow, Nauka, 1985, 136p., In Russian. For selected papers see 42-5 through 42-7. Refs. passim.
Sheshenia, N.L., ed.
Gas pipelines, Embankments, Permafrost beneath structures, Subarctic landscapes.

42-5
Influence of engineering and geological conditions on the technical state of main underground pipelines in northern areas of western Siberia. [Vliianie inzhenerno-geologicheskikh uslovii na tekhnicheskoe sostoianie podzemnykh magistral'nykh gazoprovodov v severnykh raionakh Zapadnoi Sibiri],
Nefedova, T.V., et al, Inzhenerno-geologicheskie issledovaniia dlia stroitel'stva (Engineering-geological investigations for construction) edited by R.S. Ziangirov and N.L. Sheshenia, Moscow, Nauka, 1985, p.38-42, In Russian.
Korobanova, I.G.
Gas pipelines, Embankments, Permafrost beneath structures, Geocryology, Hydrothermal processes, Subarctic landscapes.

42-6
Engineering-geological classification of cave-in and sliding processes on slopes of the Naryn River basin. [Inzhenerno-geologicheskaia tipizatsiia opolznevykh i obval'nykh sklonov basseina r. Naryn],
Sheshenia, N.L., Inzhenerno-geologicheskie issledovaniia dlia stroitel'stva (Engineering-geological investigations for construction) edited by R.S. Ziangirov and N.L. Sheshenia, Moscow, Nauka, 1985, p.56-67, In Russian.
River basins, Slope processes, Landslides, Soil creep, Soil freezing, Freeze thaw cycles, Climatic factors.

42-7
Problems in mapping ice content in permafrost. [Nekotorye problemy kartografirovaniia l'distosti mnogoletnemerzlykh gruntov],
Vasil'chuk, IU.K., et al, Inzhenerno-geologicheskie issledovaniia dlia stroitel'stva (Engineering-geological investigations for construction) edited by R.S. Ziangirov and N.L. Sheshenia, Moscow, Nauka, 1985, p.78-82, In Russian. 4 refs.
Gruzdov, A.V.
Mapping, Permafrost distribution, Permafrost structure, Ice veins, Ice volume, Ice structure, Classifications.

42-8
Conference of young specialists in the geography of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports. [Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov],
Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984, Irkutsk, 1984, 184p., In Russian. For selected summaries see 42-9 through 42-18.
Antipov, A.N., ed.
DLC HC337.R852S535
Classifications, Mathematical models, Landscape types, Glacial lakes, Glacial rivers, Mountain glaciers, Rock glaciers, Glacier alimentation, Glacier ablation, Runoff, Soils, Slope processes, Taiga.

42-9
Water-balance characteristics of small lakes in the East Siberian geosystems. [Vodnobalansovye kharakteristiki malykh ozer geosistem iuga Vostochnoi Sibiri],
Aseev, V.V., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.11-13, In Russian.
DLC HC337.R852S535
Landscape types, Glacial lakes, Water balance, Snow cover distribution, Snow water equivalent, Thermal regime, Alimentation, Taiga, Mountains.

42-10
Determination of coefficients characterizing the intensity of diffusion in discrete models of heat transfer in soil and the atmosphere. [Opredelenie koeffitsientov kharakterizuiushchikh intensivnost' diffuzii v diskretnoi modeli teploobmena v atmosfere i pochve],
Bokhovko, G.V., et al, Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.16-17, In Russian.
Konstantinov, G.N., Epova, L.A.
DLC HC337.R852S535
Mathematical models, Heat transfer, Diffusion, Soils, Atmospheric physics.

42-11
Rock streams in the Kolyma power plant area and forecasts of their interactions with the water reservoir. [Kurumy raiona Kolymskoi GES i prognoz ikh vzaimodeistviia s vodokhranilishchem],
Govorushko, S.M., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.28-30, In Russian.
DLC HC337.R852S535
Slope processes, Slope stability, Rock streams, Soil erosion, Revegetation, Hydraulic structures.

42-12
Landscape-geochemical basis for developing natural resources in taiga and tundra of Evenkiya. [Landshaftno-geokhimicheskoe obosnovanie ratsional'nogo ispol'zovaniia prirodnykh resursov tundrovo-taezhnykh landshaftov Evenkii],
Zhuravel', N.E., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.43-45, In Russian.
DLC HC337.R852S535
Economic development, Taiga, Tundra, Soil erosion, Grazing, Revegetation, Mosses, Lichens.

42-13
Role of glaciers and snow fields in the formation of geologic complexes in the volcanic regions of Kamchatka. [Rol' lednikov i snezhnikov v formirovanii geokompleksov vulkanicheskikh raionov Kamchatki],
Kanishchev, V.N., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.52-54, In Russian.
DLC HC337.R852S535
Mountain glaciers, Snow cover effect, Glacial deposits, Glacial erosion, Periglacial processes.

42-14
Dynamics of rock glacier landscapes. [Landshafty kamennykh gletcherov i ikh dinamika],
Kokarev, A.L., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.59-61, In Russian.
DLC HC337.R852S535
Rock glaciers, Origin, Ice composition, Glacier ice, Impurities, Glacial erosion, Topographic effects.

42-15
Coastal naleds in southwestern Kamchatka Peninsula. [Beregovye naledi iugo-zapadnoi Kamchatki],
Malorov, I.S., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.70-73, In Russian.
DLC HC337.R852S535
Sea water freezing, Naleds, Shores, Fast ice, Ice composition, Ice accretion, Ice volume.

42-16
Glacial runoff in the Central Altai. [Lednikovyi stok Tsentral'nogo Altaia],
Narozhnev, IU.K., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.78-81, In Russian.
DLC HC337.R852S535
Glacial rivers, Runoff, Water reserves, Forecasting, Alpine landscapes, Snow water equivalent, Glacier ablation.

42-17
Using dendrochronologic analysis in studying naled phenomena. [Opyt primeneniia dendrokhronologicheskogo analiza pri izuchenii nalednykh iavlenii],
Novitskaia, N.I., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.82-83, In Russian.
DLC HC337.R852S535
Permafrost hydrology, River basins, Naleds, Age determination, Forecasting.

42-18
Thermokarst on the naled fields of Verkhnecharskaya basin. [Termokarst na nalednykh poliankh Verkhnecharskoĭ kotloviny],
Sannikov, S.A., Konferentsiia molodykh geografov Sibiri i Dal'nego Vostoka, 9th, Irkutsk, 1984. Geograficheskie problemy osvoeniia vostochnykh raionov SSSR. Tezisy dokladov (Conference of young specialists on the geology of Siberia and the Far East, 9th, Irkutsk, 1984. Geographic problems in economic development of eastern regions of the USSR. Summaries of reports) edited by A.N. Antipov, Irkutsk, 1984, p.94-96, In Russian.
DLC HC337.R852S535
River basins, Permafrost distribution, Permafrost hydrology, Naleds, Thermokarst.

42-19
Seismic properties of fine-grained frozen ground. [Seismicheskie svoĭstva merzlykh dispersnykh gruntov],
Baulin, IU.I., Seismicheskie svoĭstva gruntov (Seismic properties of ground) edited by L.A. Misharina and V.N. Tabulevich, Moscow, Nauka, 1985, p.68-73, In Russian. 14 refs.
DLC TA705.S39
Frozen fines, Seismic surveys, Acoustic measurement, Frozen ground physics, Frozen ground strength, Permafrost structure, Ground ice, Permafrost distribution.

42-20
Development of an analytical method for explosive residues in soil.
[illegible] T.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* June 1987, CR 87-07, ADA-183 738, Refs. p.19-21.
Walsh, M.E.
Explosives, Soil pollution, Military operation, Measuring instruments, Experimentation.
An analytical method was developed to determine the concentrations of HMX, RDX, TNB, DNB, Tetryl, TNT and 2,4-DNT in soil. The method involves extracting a 2-g sample with 50 mL of acetonitrile using an ultrasonic bath procedure for 18 hr. A 10-mL portion of the extract is diluted with 10 mL of water, filtered through a 0.45-micron Millex SR filter, and analyzed by RP-HPLC using a fixed 254-nm UV detector. Separations were obtained on an LC-18 column eluted with 50:50 water-methanol. Retention times were 2.55, 3.82, 5.16, 6.25, 7.04, 8.47 and 10.15 min for HMX, RDX, TNB, DNB, Tetryl, TNT and 2,4-DNT, respectively. Confirmation of analyte identities is recommended by RP-HPLC on an LC-CN column using 50:50 water-methanol. Kinetic studies using naturally contaminated soil indicated that equilibrium was achieved within 24 hr for the majority of soils and analytes studied.

42-21
Use of Landsat digital data for snow cover mapping in the upper Saint John River basin, Maine.
Merry, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* June 1987, CR 87-08, 68p., ADA-183 213, Refs. p.52-57.
Miller, M.S.
Snow cover distribution, Snow depth, Remote sensing, Snow water equivalent, Mapping, LANDSAT, Computer applications, Forest land.
Measurements of snow depth and its water equivalent were obtained at 11 snow courses in the Allagash, Maine, area in conjunction with the acquisition of five Landsat-2 and -3 images during the 1977-78 and 1978-79 winters. To test a hypothesis that Landsat reflected radiance values on a regional scale do change, histograms of the Landsat MSS band 7 reflected radiance values for a 300 x 300 pixel (420 sq km) area near Allagash were evaluated to quantify the change. A statistical description (skewness and kurtosis) of the histogram for each scene was developed and then correlated with ground measurements of snow depth. A snow index based on skewness and modal population was found to correlate well with snow depth. Following these initial results, the Landsat data were re-examined and corrections were made for solar elevation and MSS sensor calibration. The reflected radiance from open areas showed a consistent increase in intensity with increasing snow depth. The forested land cover classes did not change with snow depth.

42-22
Environmental atlas for Beaufort Sea oil spill response.
Dickins, D., et al, Yellowknife, N.W.T., Environmental Protection Service, Mar. 1987, 182p., 42 refs.
Oil spills, Environmental impact, Maps, Sea ice, Natural resources, Logistics, Ecosystems, Ice conditions, Tundra, Shores, Beaufort Sea.

42-23
Damaging freezing processes at heat output with earth heat pump systems. [Skadliga tjälprocesser vid värmeuttag med ytjordvärmesystem],
Fredén, S., *Sweden. Statens väg- och trafikinstitut. Rapport,* 1987, No.320, 15p., In Swedish with English summary. 4 refs.
Heat pipes, Frost heave, Soil freezing, Underground pipelines, Soil temperature, Temperature effects.

42-24
Antarctic Treaty regime: law, environment and resources.
Triggs, G.D., ed, Cambridge, Cambridge University Press, 1987, 237p., For individual papers see 42-25 and 42-26 or A-36137, A-36145 through A-36147, E-36136, M-36138 through M-36144 and M-36148 through M-36152.
DLC JX4084.A5 A556 1987
Economic development, Natural resources, Environmental protection, Antarctica.
The papers in this volume were written for an international conference held in London, Apr. 11-12, 1985. The conference, entitled 'Whither Antarctica?', was organized by the British Institute of International and Comparative Law. This work is intended to build upon the 1982 publication *Antarctic resources policy: scientific, legal and political issue,* edited by F. Orrego-Vicuña (see 13A-28807 or 38-690) by updating the legal, resources and environmental issues presently under consideration within the Antarctic Treaty system and, more recently, by the Secretary-General of the United Nations. An objective of this collection has been to provide a guide to the papers by including an introduction to each part which incorporates points made during conference discussion. Part I treats the physical environment and scientific research; Part II, legal issues; Part III, protecting the marine environment; Part IV, minerals regulation; and Part V, future policies. (Auth. mod.)

42-25
Antarctic physical environment.
Drewry, D.J., Antarctic Treaty regime: law, environment and resources, edited by G.D. Triggs, Cambridge, Cambridge University Press, 1987, p.6-27, 41 refs.
DLC JX4084.A5 A556 1987
Geologic structures, Minerals, Ice sheets, Sea ice, Climate.
The geographic and geological characteristics of Antarctica are described with emphasis on special influences of the continental ice cover upon Earth's climate, oceanographic patterns and the unusual depth of the antarctic continental shelf. Particular topics considered include the: geographical setting, geophysical structure, geological evolution and mineral resources, ice sheet, antarctic ocean and sea ice, and climate characteristics. (Auth. mod.)

42-26
Scientific opportunities in the Antarctic.
Laws, R.M., Antarctic Treaty regime: law, environment and resources, edited by G.D. Triggs, Cambridge, Cambridge University Press, 1987, p.28-48, 11 refs.
DLC JX4084.A5 A556 1987
Research projects.
Outlined are the diversity and interrelated nature of scientific research in Antarctica which influences the study of geology, geophysics, plate tectonics, glaciology, climatology, oceanography, meteorology and geophysics, biology and ecology of living organisms. It is argued that the very special nature of antarctic research lies in the simplicity of the environment. There are few people, no industry; environmental impact and pollution are minimal; the rock structures are relatively uncomplicated; the ecosystems are non-specific and the ocean food webs are simple and dominated by krill as the key species. This simplicity provides scientists with unique opportunities to expand their knowledge. (Auth.)

42-27
Probability analysis of working conditions for excavating machines in Siberia and the Far North. [Analiz veroiatnykh uslovii ekspluatatsii zemleroinykh mashin v raionakh Sibiri i Kraĭnego Severa],
Nedorezov, I.A., et al, *Stroitel'nye i dorozhnye mashiny,* Feb. 1987, No.2, p.24-26, In Russian. 12 refs.
Zhurbin, V.G.
Roads, Construction equipment, Cold weather operation, Cold weather performance, Continuous permafrost, Earthwork.

42-28
Calculation of forces for cutting frozen ground containing gravel and shingle inclusions. [Raschet sil rezaniia merzlykh gruntov s gravĭino-galechnikovymi vkliucheniiami],
Sokolov, L.K., et al, *Stroitel'nye i dorozhnye mashiny,* Apr. 1986, No.4, p.24-26, In Russian. 7 refs.
Osipenko, B.V., Dashevskiĭ, A.G.
Earthwork, Excavation, Trenching, Frozen ground, Equipment, Design.

42-29
Influence of static overload on the efficiency of percussion excavation of frozen ground. [Vliianie staticheskoĭ prigruzki na effektivnost' udarnogo razrusheniia merzlykh gruntov],
Nedorezov, I.A., et al, *Stroitel'nye i dorozhnye mashiny,* June 1986, No.6, p.24-25, In Russian. 4 refs.
Isaev, O.K.
Hammers, Excavation, Earthwork, Frozen ground.

42-30
Specific features of artificial freezing of rocks when building shafts in potassium mines. [Osobennosti zamorazhivaniia porod pri sooruzhenii stvolov na kaliĭnykh mestorozhdeniiakh],
Shparber, P.A., *Shakhtnoe stroitel'stvo,* July 1986, No.7, p.19-21, In Russian.
Brines, Artificial freezing, Mining, Excavation.

42-31
Docking of ships in freezing weather. [Dokovanie korableĭ zimoĭ],
Pavlov, P., *Tekhnika i vooruzhenie,* Feb. 1987, No.2, p.21, In Russian.
Ice navigation, Ships, Docks, Cold weather operation.

42-32
Freezing of peat deposits dehydrated by drainage methods. [Promerzanie torfianoĭ zalezhi pri drenazhnom sposobe osusheniia],
Smelovskiĭ, V.E., et al, *Torfianaia promyshlennost',* July 1986, No.7, p.7-9, In Russian.
Poliankov, V.T.
Swamps, Drainage, Peat, Frost penetration, Soil water migration, Phase transformations, Snow cover effect, Thawing rate.

42-33
Ability of a walking, swamp-designed vehicle to negotiate obstacles. [Prokhodimost' shagaiushchego bolotokhoda po prepiatstviiam],
Petrov, A.A., et al, *Torfianaia promyshlennost',* June 1986, No.6, p.20-23, In Russian. 2 refs.
Korovitsyn, L.F.
All terrain vehicles, Swamps, Design.

42-34
Operation of gasoline motor pumps in freezing weather. [Ekspluatatsiia BMP v zimnikh usloviiakh],
Shatilov, B., *Tekhnika i vooruzhenie,* Nov. 1986, No.11, p.16-17, In Russian.
Winter maintenance, Military transportation, Tanks (combat vehicles), Engine starters, Cold weather performance, Cold weather operation.

42-35
Artificial thawing of ground. [Ottaivanie gruntov],
Usenko, V., *Tekhnika i vooruzhenie,* Dec. 1986, No.12, p.27, In Russian.
Military equipment, Earthwork, Cold weather construction, Artificial thawing, Electric equipment, Design.

42-36
Estimating the thermal influence of flames on frozen ground. [K prognozirovaniiu teplovogo vliianiia delstvuiushchego fakela na merzlye grunty],
Rubtsov, N.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Izvestiia. Seriia tekhnicheskikh nauk,* June 1986, 10(2), p.33-36, In Russian. 3 refs.
Danielian, IU.S., Gamarnik, V.B., Varichenko, S.A.
Gas wells, Artificial thawing, Continuous permafrost, Natural gas, Petroleum industry, USSR—Tyumen'.

42-37
Muonium diffusion in ice.
Leung, S.K., et al, *Chemical physics,* 1987, 114, p.399-409, 42 refs.
Brodovitch, J.C., Newman, K.E., Percival, P.W.
Ion diffusion, Ice crystals.

42-38
Production of heavy-wall, hight-strength SAW bent-pipe for Arctic use.
Sakamoto, H., et al, *Iron and Steel Institute of Japan. Transactions,* Apr. 1987, 27(4), p.291-298, 3 refs.
Pipes (tubes), Steels.

42-39
Ablation of ice-solids and wax-solids mixtures in turbulent axisymmetric water jets.
Law, H.S., et al, *Canadian journal of chemical engineering,* June 1987, 65(3), p.420-429, With French summary. 11 refs.
Masliyah, J.H., Nandakumar, K.
Hydraulic jets, Ablation, Ice deterioration.

42-40
Mechanical behavior of ice. Interaction mechanisms between ice and offshore structures. (Comportement mécanique de la glace. Mécanismes de l'interaction glace/ouvrages en mer),
Putot, C., *Institut Français du Pétrole. Revue,* May-June 1987, 42(3), p.347-373, In French with English summary. 17 refs.
Offshore structures, Ice pressure, Drift.

42-41
Effect of water soluble salts on the nucleating ability of the AgI-AgBr-CuI system.
Palanisamy, M., et al, *Journal of materials science,* Apr. 1987, 22(4), p.1335-1340, 26 refs.
Thangaraj, K., Gobinathan, R., Ramasamy, P.
Supercooling, Nucleating agents, Freezing nuclei, Ice nuclei, Salinity.

42-42
Electronics stand up to damage from snow and ice.
Suzuki, M., et al, *Institute of Electronics and Communications Engineers of Japan. Journal,* Sep. 1986, 69(9), p.897-901, In Japanese. 10 refs.
Monma, M.
Snow loads, Icing, Electronic equipment.

42-43
Approach for predicting snow damage to Ponderosa Pine plantations.
Megahan, W.F., et al, *Forest science,* June 1987, 33(2), p.485-503, 24 refs.
Steele, R.
Snow loads, Damage, Forest canopy.

42-44
Is the trans-Channel Icebridge a viable alternative to the Channel Tunnel.
Cathcart, R.B., *Speculations in science and technology,* Mar. 1987, 10(1), p.63-65, 7 refs.
Ice crossings, Artificial freezing.

42-45
State-of-the-art methods for computing global and local loads in ice structure interaction.
Norsk Veritas Ltd., Calgary, Alberta, *Canada. Architectural and Engineering Services. Technical report,* July 1986, AES/SAG 1-2:86-9, 184p., Refs. p.159-184.
Ice loads, Ice solid interface, Offshore structures, Ice pressure, Ice strength, Ice mechanics, Ice structure, Flexural strength, Ice friction, Models.

42-46
Evaluation of the MEDOF ice load sensor in the Arctic environment.
Strandberg, A., *Canada. Architectural and engineering Services. Technical report,* July 1986, AES/SAG 1-2:86-12, 46p.
Ice loads, Ice pressure, Offshore structures, Ice conditions, Sea ice distribution, Stresses, Measuring instruments, Boreholes, Tests, Beaufort Sea.

42-47
Evaluation of ice force sensors in the Arctic environment.
Newar, A.M., et al, *Canada. Architectural and Engineering Services. Technical report,* July 1986, AES/SAG 1-2:86-13, 139p.
Edworthy, J., Steele, M., Blant, H.
Ice loads, Ice pressure, Offshore structures, Ice conditions, Design criteria, Tides, Measuring instruments, Ice cover thickness.

42-48
Bearing capacity of broken ice zones.
Roth, D.R., et al, *Canada. Architectural and Engineering Services. Technical report,* July 1986, AES/SAG 1-2:86-15, 65p., Refs. p.(R)1-(R)3.
Marcellus, R.W.W.
Ice strength, Bearing strength, Ice breaking, Ice physics, Ice friction, Thermodynamics, Shear stress, Heat transfer, Analysis (mathematics).

42-49
Ice structure interaction: engineering design and construction criteria; Vols.1 and 2.
Bercha, F.G., *Canada. Architectural and Engineering Services. Technical report,* July 1986, AES/SAG 1-2:86-17v1 and 17v2, 2 vols., 53 refs.
Ice solid interface, Ice loads, Offshore structures, Engineering, Design criteria, Ice pressure, Mathematical models, Computer applications, Artificial islands.

42-50
Probabilistic ice load analysis of Cape Noire wharf; Vols. 1 and 2.
Bercha, F.G., *Canada. Architectural and Engineering Services. Technical report,* July 1986, AES/SAG -12:86-18v1 and 18v2, 2 vols., Refs. passim.
Ice loads, Piles, Ice solid interface, Ice strength, Water level, Wharves, Statistical analysis.

42-51
Products and effects of modern eolian activity on a nineteenth-century glacier-pushed ridge in West Spitsbergen, Svalbard.
Riezebos, P.A., et al, *Arctic and alpine research,* Nov. 1986, 18(4), p.389-396, 17 refs.
Glacial erosion, Glacier surges, Glacial deposits, Topographic features, Moraines, Particle size distribution, Eolian soils, Norway—Spitsbergen.

42-52
Glaciers and the morphology and structure of Milne ice Shelf, Ellesmere Island, N.W.T., Canada.
Jeffries, M.O., *Arctic and alpine research,* Nov. 1986, 18(4), p.397-405, 31 refs.
Glacier surges, Glacier tongues, Ice shelves, Structural analysis, Fast ice, Geomorphology, Ice growth, Paleoclimatology.

42-53
Mapping of glaciation levels: comments on the effect of sampling area size.
Humlum, O., *Arctic and alpine research,* Nov. 1986, 18(4), p.407-414, 31 refs.
Glaciation, Geomorphology, Mapping, Landscapes, Snow line.

42-54
Ballooning spiders as a component of arthropod fallout on snowfields of Mount Rainier, Washington, U.S.A.
Crawford, R.L., et al, *Arctic and alpine research,* Nov. 1986, 18(4), p.429-437, 33 refs.
Edwards, J.S.
Snow cover, Air pollution, Cryobiology, Ecology, Snow surface, Snow composition.

42-55
Pneumatically de-iced ice detector—final report, phase 2, part 1.
Franklin, C.H., et al, MP 2249, Ann Arbor, MI, Franklin Engineering Company, May 1986, 9p. + appends.
Rogne, C.O., Vinton, C.S.
Ice detection, Ice removal, Equipment, Ice formation, Measuring instruments, Wind factors, Ice accretion, Loads (forces).

42-56
Viscoplastic properties of ice and frozen ground. (Viazkoplastichnost' l'da i merzlykh gruntov),
Zaretskiĭ, IU.K., et al, Novosibirsk, Nauka, 1986, 184p., In Russian with abridged English table of contents enclosed. Refs. p.173-183.
Chumichev, B.D., Shchebolev, A.G.
Ice physics, Elastic properties, Plastic properties, Rheology, Frozen ground, Frozen rocks, Permafrost, Artificial freezing, Ice creep, Mathematical models.

42-57
The Polar Shelf: the saga of Canada's Arctic scientists.
Foster, M., et al, Toronto, NC Press Ltd., 1986, 128p.
Marino, C.
Research projects, Ice surveys, Snow surveys, Ice shelves, Offshore drilling, Ecosystems.

42-58
Canadians declare open season on errant icebergs.
West, A., *Offshore engineer,* Feb. 1986, p.24-27.
Iceberg towing, Drift, Ice conditions, Offshore drilling, Ice loads, Countermeasures.

42-59
Ice not the only obstacle in Hibernia's path.
Morgan, D., *Offshore engineer,* Feb. 1986, p.27-28.
Sea ice distribution, Offshore structures, Offshore drilling, Icebergs, Ice loads, Ocean environments, Ice strength.

42-60
Reference marks and datum points of the USSR state geodetic network. *U.S. Army Foreign Science and Technology Center, Charlottesville, VA. Technical translation,* May 1980, FSTC-HT-1452-79, 54p., ADB-049 839L, Translation of Tsentry i repery Gosudarstvennoĭ geodesicheskoĭ seti SSSR.. Moscow, Nedra, 1973.
Permafrost physics, Excavation, Cold weather operation, Standards, Frozen ground mechanics, Seasonal variations, Frost heave, Corrosion, Coatings.

42-61
Feasibility test of battery slave cables and receptacles (12-volt) for commercial vehicles.
Davis, L.D., *U.S. Army Cold Regions Test Center. Final letter report,* Aug. 8, 1980, TECOM proj. No.1-VG-123-000-011, 13p. ADB-049 983L.
Vehicles, Cold weather tests, Winter maintenance, Temperature effects.

42-62
Development of analytical models related to experimental work on ice structure interaction.
Tomin, M.J., et al, *Canada. Architectural and Engineering Services. Technical report,* July 1986, No.AES/SAG 1-2:86-19, 229p. + append., Refs. p.91-98.
Cormeau, A., Jordan, I.J.
Ice loads, Ice solid interface, Offshore structures, Ice models, Ice creep, Ice cracks, Fracturing, Mathematical models, Tests.

42-63
Study of caisson towing and sinking methods. Vol.1 Formal report. Vol.2 User's manual.
Menon, B., *Canada. Architectural and Engineering Services. Technical report,* July 1986, AES/SAG 1-2:86-14v1 and 14v2, 2 vols., 17 refs.
Caissons, Ice loads, Ice solid interface, Ice conditions, Cold weather construction, Offshore structures, Transportation, Computer programs, Analysis (mathematics), Models.

42-64
Antarctica: soils, weathering processes and environment.
Campbell, I.B., et al, Developments in soil science, No.16, Amsterdam, Elsevier, 1987, 368p., Refs. p.341-358.
Claridge, G.G.C.
DLC S599.9.A6.C36 1987
Cryogenic soils, Geologic processes, Frozen rocks, Geochemistry, Geochronology, Salt lakes, Antarctica.
It is assumed that the reader has little previous knowledge of Antarctica, and therefore sufficient background information is given to allow the antarctic environment as it is related to soil formation to be understood. It was not the purpose to write a treatise on all aspects of Antarctica, and hence there are many omissions in the discussions on the geology, climatology and biology of the continent. The emphasis is on only those features which have seemed relevant from a soil point of view. Following a general introductory chapter to the antarctic continent, the authors delve into the details of geology and geomorphology (basements, rocks, sediments, land forms, alluvial features); climate (wind, precipitation, climatic regions, ice-free regions, and soils); soil biology (distribution of organisms by region and soil development); physical weathering and rock disintegration (glacial action, wind action, frost action); chemical weathering (rock weathering, clay mineral formation, salt influence); soils and soil properties (pedological research, soil features development, soil depth, frozen ground); soil distribution (forming factors, moisture, parent material, time, weathering); soil salts (precipitation chemistry, saline lakes, coastal regions, deposits in soils, and origin); soil weathering and glacial history (multiple glaciations, age, chronology, reconstruction); classification of soils (system details, alternative approaches, other aridic soils); and environmental considerations (ecosystems, man's influence, soil sensitivity, stability and renewal).

42-65
Multispectral study of the St. Louis area under snow-covered conditions using NOAA-7 AVHRR data.
Kidder, S.Q., et al, *Remote sensing of environment,* July 1987, 22(2), p.159-172, 17 refs.
Wu, H.T.
Spaceborne photography, Radiometry, Snow surveys, Albedo.

42-66
Chemical, physical and structural properties of estuarine ice in Great Bay, New Hampshire.
Meese, D.A., et al, *Estuarine, coastal and shelf science,* June 1987, 24(6), MP 2251, p.833-840, 5 refs.
Gow, A.J., Mayewski, P.A., Ficklin, W., Loder, T.C.
Ice physics, Ice composition, Ice structure, Sea ice, Estuaries.

42-67
Helicopter rotor icing protection methods.
Coffman, H.J., Jr., *American Helicopter Society. Journal,* Apr. 1987, 32(2), p.34-39, 7 refs.
Aircraft icing, Helicopters, Propellers, Ice prevention.

42-68
Performance characteristic of rotorcraft airfoils with simulated ice.
Flemming, R.J., et al, *American Helicopter Society. Journal,* Apr. 1987, 32(2), p.67-77, 21 refs.
Shaw, R.J., Lee, J.D.
Aircraft icing, Helicopters, Wind tunnels.

42-69
Theory of particle coarsening with a log-normal distribution.
Colbeck, S.C., *Acta metallurgica*, July 1987, 35(7), MP 2250, p.1583-1588, With French and German summaries. 22 refs.
Metals, Low temperature tests.

42-70
Glacial striae, roches moutonnées and ice movements in the Faeroe Islands.
Jörgensen, G., et al, Its DGU series C, No.7, Copenhagen, Denmarks geologiske undersögelse, 1986, 113p. + map, 22 refs.
Rasmussen, J.
Glacial erosion, Ice mechanics, Glaciation, Geomorphology, Maps, Paleoclimatology, Shores, Denmark—Faeroe Islands.

42-71
Observations of effects on agricultural soils of the artificial enhancement of snowmelt in interior Alaska.
Holty, J.G., et al, *Agroborealis*, July 1987, 19(1), p.20-26, 7 refs.
Kawasaki, K., Osterkamp, T.E.
Snowmelt, Dusting, Soil water, Albedo, Artificial melting, Ground thawing, Agriculture, Experimentation.

42-72
Airships: potential Alaskan transportation alternative.
Hoke, O.A., *Alaska. Legislature House Research Agency, Juneau. Report*, Mar. 1981, No.80-12, 147p. PB81-194 515.
Transportation, Airplanes, Cold weather operation, United States—Alaska.

42-73
Sewage lagoons in cold climates. *Canada. Environmental Protection Service. Report*, Mar. 1985, EPS 4/NR/1, 89p., With French summary. Refs. p.61-89.
Sewage disposal, Sewage treatment, Ponds, Permafrost thermal properties, Ice cover effect, Snow cover effect, Environmental impact, Climatic factors, Seasonal variations.

42-74
Minimizing the environmental impact of the disposal of snow from urban areas; Proceedings of Workshop, June 11-12, 1984.
Workshop on Minimizing the Environmental Impact of the Disposal of Snow from Urban Areas, Montreal, Quebec, June 11-12, 1984, *Canada. Environmental Protection Service. Report*, Oct. 1985, EPS 2/UP/1, 125p., Refs. passim. Consists of 11 papers.
Snow disposal, Snow removal, Environmental protection, Pollution, Snowmelt, Environmental impact, Meetings.

42-75
Cold climate sewage lagoons; Proceedings of the 1985 Workshop, Winnipeg, Manitoba.
Townshend, A.R., ed, *Canada. Environmental Protection Service. Report*, Apr. 1987, EPS 3/NR/1, 159p., Refs. p.151-156.
Knoll, H., ed.
Sewage disposal, Sewage treatment, Permafrost distribution, Ice cover effect, Sludges, Water treatment, Pollution, Ponds, Environmental impact, Meetings, Freeze thaw cycles, Limnology.

42-76
Arctic sea ice, 1973-1976: satellite passive-microwave observations.
Parkinson, C.L., et al, NASA SP-489, Washington, D.C., U.S. National Aeronautics and Space Administration, 1987, 296p., Refs. p.231-239.
Comiso, J.C., Zwally, H.J., Cavalieri, D.J., Gloersen, P., Campbell, W.J.
Sea ice distribution, Remote sensing, Ice physics, Microwaves, Climatic factors, Ice formation, Ice cover thickness, Ice conditions, Arctic Ocean.

42-77
Relative levels of natural and anthropogenic lead in recent antarctic snow.
Boutron, C.F., et al, *Journal of geophysical research*, July 20, 1987, 92(D7), p.8454-8464, 43 refs.
Patterson, C.C.
Snow composition, Impurities, Metals, Antarctica—Dumont d'Urville Station, Antarctica—Amundsen-Scott Station.
Concentrations of lead have been measured by ultraclean isotope dilution mass spectrometry in large blocks of surface snow collected along a 433-km coast-interior axis in East Antarctica and near the geographic south pole. Slight contamination existed on the outside of the blocks, but concentration profiles from their exteriors to their interiors indicate that lead concentrations in the innermost parts of the blocks do represent the original concentrations in present-day antarctic snow. Geographical variations of lead concentrations appear to be mainly due to local emissions from Dumont d'Urville and Amundsen-Scott stations. The globally significant lead concentration in present-day antarctic snow is found to be about 2 pg Pb/g. The corresponding value in antarctic air is estimated to be about 7 pg Pb/cu STP, which is approximately fivefold larger than total natural lead contributed by soil dusts, volcanoes and sea salts. A tentative temporal curve of globally significant lead concentrations in antarctic ice and snow for the last 13,000 years is given. It shows concentrations of about 0.4 pg Pb/g throughout most of the Holocene, with recent fivefold increases to about 2 pg Pb/g today. The general picture is then that four-fifths of total lead in the antarctic troposphere today is anthropogenic. (Auth.)

42-78
Freezing precipitation in winter storms.
Stewart, R.E., et al, *Monthly weather review*, July 1987, 115(7), p.1270-1279, 21 refs.
King, P.
Weather forecasting, Glaze, Snow pellets, Radar echoes, Ice storms.

42-79
Vertical eddy diffusivity determined with Rn-222 in the benthic boundary layer of ice-covered lakes.
Colman, J.A., et al, *Limnology and oceanography*, May 1987, 32(3), p.577-590, 37 refs.
Armstrong, D.E.
Lake water, Water chemistry, Ice cover effect, Boundary layer.

42-80
Using LANDSAT MSS data for measuring ice sheet retreat.
Knight, P., et al, *International journal of remote sensing*, July 1987, 8(7), p.1069-1074, 2 refs.
Weaver, R., Sugden, D.
Remote sensing, Ice sheets, Spaceborne photography, Greenland.

42-81
Physical properties and structure of water. [Fizicheskie svoĭstva i struktury vody]
Zatsepina, G.N., Moscow, Universitet, 1987, 171p., In Russian with abridged English table of contents enclosed. Refs. p.166-169.
Water chemistry, Physical properties, Molecular structure, Molecular energy levels, Ice physics, Ice thermal properties, Ice electrical properties.

42-82
Climatology of mean monthly snowfall for the conterminous United States: temporal and spatial patterns.
Harrington, J.A., Jr., et al, *Journal of climate and applied meteorology*, Aug. 1987, 26(8), p.897-912, 57 refs.
Cerveny, R.S., Dewey, K.F.
Climatology, Snowfall.

42-83
Coupled dynamic-thermodynamic model of an ice-ocean system in the marginal ice zone.
Häkkinen, S., *Journal of geophysical research*, Aug. 15, 1987, 92(C9), p.9469-9478, 43 refs. Comment by P.C. Chu and R.W. Garwood, Jr., Jbid.,May 15, 1988, 93(C5), p.5155-5156. 8 refs.
Chu, P.C., Garwood, R.W., Jr.
Sea ice, Ice edge, Ice water interface, Thermodynamics, Models.

42-84
Variability of an under-ice river plume in Hudson Bay.
Ingram, R.G., et al, *Journal of geophysical research*, Aug. 15, 1987, 92(C9), p.9541-9547, 18 refs.
Larouche, P.
River flow, Subglacial observations, Ice cover, Canada—Hudson Bay, Canada—Quebec—Great Whale River.

42-85
Why is there little anthropogenic CO2 in the Antarctic Bottom Water.
Poisson, A., et al, *Deep-sea research*, July 1987, 34(7A), p.1255-1275, Refs. p.1273-1275.
Chen, C.T.A.
Ice cover effect, Air water interactions, Chemical composition, Carbon dioxide.
Late-winter and early-spring carbonate data compared with summer data confirm the notion that the Weddell Sea pack ice effectively blocks the air-sea exchange of gases. The upwelled old Weddell Deep Water (WDW) dilutes the anthropogenic CO_2 concentration in the winter surface water, which then mixes with the Weddell Shelf Water and more WDW to form the Antarctic Bottom Water (AABW). Since the WDW probably was formed before industrialization and the winter surface water is also deficient in excess CO2, it was expected and found that the AABW contains little anthropogenic CO2. The dilution of the winter surface water by the old WDW also explains why less excess CO2 is found in the remnant winter water (the minimum temperature layer) than in the surface water for the GEOSECS and IGY summer stations. The pre-industrial CO2 concentration is estimated to be 268 micro-atm. (Auth.)

42-86
Multispectral Landsat images of Antarctica.
Lucchitta, B.K., et al, *U.S. Geological Survey. Bulletin*, 1987, No.1696, 21p., Refs. p.20-21.
DLC QE75.B9
Mapping, LANDSAT, Ice, Snow.
The U.S. Geological Survey has initiated a program to map Antarctica by using colored, digitally enhanced Landsat multispectral scanner (MSS) images to increase existing map coverage and to improve upon previously published Landsat maps. A mosaic image in map projection of the McMurdo Sound region was compiled. This digitally enhanced mosaic covers 4 complete and 2 partial 1:250,000-scale topographic quadrangles and shows significantly more detail in rock and ice than do previously compiled black-and-white paperprint mosaics of the region. Digitally processed Landsat images can provide accurate and detailed base maps, and they may aid in solving several antarctic research problems. Some of these problems are addressed in the mapping program; results are given in this report. The images also reveal that the Byrd Glacier has moved at an average velocity of 800 m/yr within 10 years. It is found that the resolution of Landsat MSS (about 80 m) is insufficient for most detailed spectral studies because almost all rock outcrops in Antarctica are small, but it is anticipated that the resolution of thematic mapper (TM) images (about 30 m) will be adequate for such studies in the future. (Auth. mod.)

42-87
Investigation of the crystal structure of sea ice in the Bothnian Bay.
Omstedt, A., *Swedish Meteorological and Hydrological Institute. Reports hydrology and oceanography*, Mar. 1985, SMHI-RHO No.40, 17p., 8 refs.
Ice crystal structure, Sea ice, Ice density, Ice salinity, Drill core analysis, Ice cores, Ice cover, Bothnia, Bay.

42-88
YMER-80, satellites, Arctic sea ice and weather.
Thompson, T., *Swedish Meteorological and Hydrological Institute. Reports oceanography*, Mar. 1986, SMHI-RO No.2, 27p. + append.
Sea ice distribution, Remote sensing, Ice surveys, Ice conditions, Mapping, Weather stations.

42-89
Millimeter wave radiometric detection of ice on aircraft.
Kozakoff, D.J., et al, *Millimeter Wave Technology, Inc. MWT final report*, Apr. 15, 1983, No.83107, 112p., PB86-201 944, NSF/DMR-83005, Refs. p.72-78.
Morton, T.P.
Aircraft icing, Ice detection, Remote sensing, Ice electrical properties, Radiometry, Dielectric properties.

42-90
Cold weather transit technology program. Volume 4: Advanced countermeasures for combating ice and snow problems.
Lee, L.H.N., et al, *U.S. Urban Mass Transportation Administration. Report*, Sep. 1981, UMTA-IN-06-0009-82-4, 117p., PB83-162 099, 5 refs.
Road icing, Ice prevention, Stress strain diagrams, Ice adhesion, Ice strength, Ice cracks, Snow removal, Heating, Countermeasures.

42-91
Extreme wind predictions for first order weather stations in Alaska.
Leslie, L.D., Alaska Climate Center technical note, No.1, Fairbanks, University of Alaska, Arctic Environmental Information and Data Center, June 1984, 27p., 13 refs.
Wind velocity, Design criteria, Forecasting, Weather stations, Distribution, Statistical analysis, United States—Alaska.

42-92
Benchmark design and installation: a synthesis of existing information.
Gatto, L.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1987, SR 87-10, 73p., ADA-183 925, 27 refs.
Bench marks, Cold weather construction, Frost heave, Stability, Subsidence, Design, Surveys.
Techniques used for topographic, hydrographic, construction, boundary, geodetic and structural movement surveys are only as accurate as the benchmarks used as reference. In northern areas, frost action can cause substantial vertical movement of benchmarks. Benchmarks may also subside or shift in wetlands and coastal areas. Various benchmark designs and installation procedures reduce or eliminate movement, but information on the designs and procedures is widely scattered and not available to Corps of Engineers Districts in one report. This report is a synthesis of information compiled from surveys of Corps of Engineers Districts and Divisions, U.S. and Canadian government agencies, private industry and a literature review. Matrices for selecting and installing benchmarks that meet third-order accuracy requirements or better and that are appro-

priate for various climatic and soil conditions were prepared from the synthesized information. Procedures to be followed while installing various types of benchmarks are included.

42-93
Winter evaluation of oil skimmers and booms.
Canada. Environmental Protection Service. Technical Services Branch, *Canada. Environmental Protection Service. Report,* Feb. 1984, EPS 4-EP-84-1, 109p., With French summary. 7 refs.
Oil spills, Oil recovery, Equipment, Countermeasures, Tests, Winter, Cold weather operation.

42-94
ANARE antarctic field manual (3rd ed).
Australian National Antarctic Research Expedition, Kingston, Tasmania, 1987, 140p.
Potter, S.A., ed.
Expeditions, Safety, Cold weather survival, Manuals.
In 16 chapters the manual points out the many catastrophic pitfalls waiting to entrap the unknowledgeable or unwary expeditioner, how to avoid them, and how to defeat them if avoidance fails. Among others, the topics include the nature and use of various pieces of camping gear; oversnow/ice transport; Australian antarctic stations and closeby refuges; navigation, communications, search and rescue, and emergency procedures; and environment protection. Appendix I is a Field Camp Equipment List which could also serve as a glossary of terms to be mastered. Appendix II is a table of distances, weights, and volumes in English and metric units.

42-95
Spectral measurements in a disturbed boundary layer over snow.
Andreas, E.L., *Journal of the atmospheric sciences,* Aug. 1, 1987, 44(15), MP 2254, p.1912-1939, 96 refs.
Turbulent boundary layer, Snow surface, Snow air interface, Wind velocity, Air temperature, Humidity.
Time series were measured of the turbulent fluctuations in longitudinal *(u)* and vertical *(w)* velocity and in temperature *(t)* and humidity *(q)* with fast-responding sensors in the near-neutrally stable surface layer over a snow-covered field. These series yielded individual spectra, *u-w, w-t, w-q,* and *t-q* cospectra, and phase and coherence spectra for nondimensional frequencies *(fz/U)* from roughly 0.001 to 10. This is, thus, one of the most extensive spectral sets ever collected over a snow-covered surface. With the exception of the *u-w* cospectra, all of the spectra and cospectra displayed the expected dependence on frequency in an inertial or inertial-convective subrange. At this complex site, turbulence alone determines the spectra and cospectra at high frequency, while at low frequency, the spectra and cospectra reflect a combination of topographically generated turbulence and, probably, internal waves. From the measured temperature and humidity spectra and the *t-q* cospectra, refractive index spectra for light of 0.55 micron and millimeter wavelengths were computed, the first such spectra obtained over snow. From the *u, t* and *q* spectra, the surface sensible *(He)* and latent *(Hl)* heat fluxes were estimated using the inertial-dissipation technique. Aspects of these computed and estimated values are discussed. (Auth. mod.)

42-96
Forest tundra. [Predtundrovye lesa],
Chertovskol, V.G., et al, Moscow, Agropromizdat, 1987, 169p., In Russian with English table of contents enclosed. 105 refs.
Revegetation, Forest tundra, Environmental protection, Cryogenic soils, Vegetation patterns, Continuous permafrost, Soil erosion, Geography, Human factors.

42-97
Annotated bibliography on northern environmental engineering, 1978-1979.
Armstrong, R.C., *Canada. Environmental Protection Service. Water Pollution Control Directorate. Report,* July 1981, EPS 3-WP-81-4, 100p.
Waste treatment, Water treatment, Environmental impact, Bibliographies, Engineering, Ice cover effect, Ice surveys, Snow surveys.

42-98
Floating debris control; a literature review.
Perham, R.E., *Repair, Evaluation, Maintenance, and Rehabilitation Research Program. Technical report,* June 1987, REMR-HY-2, MP 2252, 22p. + 41p. of append., 18 refs.
Hydraulic structures, Flood control, Water pollution, Damage, Maintenance. Equipment, Tests.
Floating debris can have an extremely harmful effect on certain hydraulic structures such as flood control works and navigation facilities and is consequently an important concern in maintenance and repair activities. This report assembles information found in published sources about equipment and methods used to control floating debris. Also included is an appendix on booms, their functions in the water transportation of pulpwood, and results of laboratory tests of various boom designs which was previously published by the Pulp and Paper Research Institute of Canada and which contains much useful information applicable to booms for control of floating debris.

42-99
Use of microwaves to monitor the freezing and thawing of water in plants.
Harbinson, J., et al, *Journal of experimental botany,* Aug. 1987, 38(183), p.1325-1335, 18 refs.
Woodward, F.I.
Freezing, Plant physiology, Cold tolerance.

42-100
Vibration analysis of the Yamachiche Lightpier.
Haynes, F.D., *International journal of analytical and experimental modal analysis,* Apr. 1986, 1(2), MP 2253, p.9-18, For another version see 40-1881. 14 refs.
Piers, Vibration, Ice loads, Shear strength, Mathematical models, Computer applications.

42-101
Hydropower tunnels in permafrost.
Jacobsen, T.S., et al, *International water power & dam construction,* June 1987, 39(6), p.26-35, 3 refs.
Mai, H.
Frozen ground temperature, Permafrost thermal properties, Electric power, Tunnels, Ice formation.

42-102
UV resonance Raman and UV-VIS absorption spectra of aqueous solutions of an azobenzene-containing ammonium amphiphile.
Isono, N., et al, *Journal of colloid and interface science,* June 1987, 117(2), p.400-405, 5 refs.
Solutions, Ice melting, Phase transformations.

42-103
94-GHz Doppler radar for cloud observations.
Lhermitte, R., *Journal of atmospheric and oceanic technology,* Mar. 1987, 4(1), p.36-48, 19 refs.
Radar, Cloud physics.

42-104
Refinery construction in arctic weather conditions—some construction, inspection, and corrosion concerns.
Beaumont, S., *Materials performance,* Aug. 1987, 26(8), p.53-56, 1 ref.
Construction materials, Corrosion, Cold weather construction.

42-105
Effects of intermolecular interactions on the electric field gradients in ice and liquid water. The role of electrostatics.
Cummins, P.L., et al, *Molecular physics,* July 1987, 61(4), p.795-811, 54 refs.
Bacskay, G.B., Hush, N.S.
Molecular structure, Hydrogen bonds, Ice structure, Polarization (charge separation), Ice crystals.

42-106
Embankment dams on permafrost: design and performance summary, bibliography and an annotated bibliography.
Sayles, F.H., *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1987, SR 87-11, 109p., ADA-184 163, Refs. p.28-102.
Permafrost beneath structures, Dams, Embankments, Seepage, Cold weather construction, Design, Deformation, Ponds, Spillways, Freeze thaw cycles.
The designs of embankment dams on permafrost can be divided into two general types, frozen and thawed. The frozen type of embankments and their foundations are maintained frozen during the life of the structure. The thawed type of embankments usually are designed assuming that the embankment will remain unfrozen and its permafrost foundation will thaw during construction or during the operation of the structure. In some locations where water is to be retained intermittently for short periods of time, thawed embankments have been designed assuming the permafrost will remain frozen throughout the life of the embankment. In selecting this type of design for a particular site, many factors that are peculiar to cold regions must be considered. This summary of methods of design, construction and operation of embankment dams in permafrost areas records the successes and some failures that have occurred. Embankment dams have been built and successfully operated in Canada, Greenland, the USSR and Alaska. A number of failures have been reported in the USSR and one in Alaska. Most of the difficulties arose because insufficient attention was given to establishing and maintaining a reliable frozen condition and to controlling seepage.

42-107
Airborne measurements of the spectral reflectance of freshwater ice.
Leshkevich, G.A., International Colloquium Spectral Signatures of Objects in Remote Sensing, 3rd, Les Arcs, France, Dec. 16-20, 1985. Proceedings, Paris, Institut national de la recherche agronomique, 1986, p.245-248, 7 refs.
Reflectivity, Ice spectroscopy, Remote sensing, Snow optics, Radiometry, Airborne equipment.

42-108
Tidal movement measurements on the Ekström Ice Shelf, Antarctica. [Gezeitenmessungen auf dem Ekström-Schelfeis, Antarktis],
Kobarg, W., et al, *Polarforschung,* 1986, 56(1/2), p.1-21, In German with English summary. 14 refs.
Lippmann, E.
Ice shelves, Tidal currents, Subglacial observations, Gravity, Antarctica—Ekström Ice Shelf, Antarctica—Georg von Neumayer Station.
Part of the geophysical work at the German Georg von Neumayer Station is the recording of the tidal movement of the Ekström Ice Shelf. Measurements are performed with an earthtide gravity meter for the vertical component of the movement and two simple tiltmeters for the horizontal components. Gravity measurements were done continuously during the 1984/85 winter season at the observatory of the Georg von Neumayer Station. Tilt measurements were carried out at the station and at three locations on an ice-rise at about 10 km distance from the station. Gravity measurements provide the tidal movements of the ice shelf, which amounts to about 1 m at spring tide. The most important result of the tiltmeter measurements lies in the fact that the amplitudes of tilt are substantially larger at the ice-rise than at the observatory. Results of tide-correlated ice quake activities are also presented. (Auth.)

42-109
Follow-up stake measurements on a blue ice field in the Borg Massif, New Schwabenland, Antarctica. [Nachmessungen an Pegeln auf einem Blaueisfeld im Borgmassiv, Neuschwabenland, Antarktis],
Brunk, K., et al, *Polarforschung,* 1986, 56(1/2), p.23-32, In German with English summary. 8 refs.
Staiger, R.
Ice sheets, Ice creep, Markers, Antarctica—New Schwabenland.
In Jan./Feb. 1985 a German-South African expedition had the opportunity to repeat measurements made by means of stakes planted in 1951 (Norwegian-British-Swedish Antarctic Expedition 1949-52) and 1966 (SANAE VII). Although the rediscovery of the old stakes had not been expected, the stakes could be identified and it was possible to derive movement vectors on the basis of old and heterogeneous measurement data. The long-term movement rates established basically confirm and complement the values determined in 1951. The flow rates of 9.1 cm/a to 86.4 cm/a proved to be extremely low. Observations of the stake lengths showed very little accumulation in the fringe areas of the blue ice-field (ca. 0.7 to 2.6 cm/a snow/firn); on bare ice an ablation of 2.6 cm/a water equivalent (2.9 cm/a ice) was measured. The paper begins with a description of the essential conditions for the formation of the blue ice-field. Subsequently the measurements are explained in detail and their results are discussed. (Auth.)

42-110
North polar ice cap of Mars as a steady-state system.
Budd, W.F., et al, *Polarforschung,* 1986, 56(1/2), p.43-63, With German summary. 32 refs.
Mars (planet), Ice sheets, Mass balance.

42-111
Winter cooling of firn layers of temperate alpine glacier. [Zum winterlichen Kältevorrat in einem temperierten Alpengletscher],
Ambach, W., et al, *Polarforschung,* 1986. 56(1/2), p.65-67, In German with English summary. 7 refs.
Eisner, H., Meyer, E., Schneider, H.
Firn, Mountain glaciers, Cooling.

42-112
Identification of clouds over Antarctica from satellite imagery. [Wolkenerkennung über der Antarktis in Satellitenbildern],
Raschke, E., et al, *Polarforschung,* 1986, 56(1/2), p.69-78, In German with English summary. 14 refs.
Jacobs, H., Lutz, H.-J., Steffens, U.
Clouds (meteorology), Ice sheets, Spaceborne photography, Sea ice, Antarctica.
Detailed analyses of the multispectral data of the AVHRR in the operational NOAA satellites demonstrate their usefulness to map clouds even over the highly reflecting snowfields of Antarctica. With this procedure a contrast enhancement is performed making use of the different spectral reflectance, transmittance and emittance properties respectively, of clouds and the surface below within the spectral ranges of the AVHRR. The measurements within the range between 3.5 and 3.9 micron (channel 3), which unfortunately are highly noisy during nighttime, play a key role here. Results of some initial case studies demonstrate that a computer-aided identification of water and ice clouds over Antarctica and adjacent ocean and sea-ice fields is possible, where even sea-ice beneath optically thinner clouddecks can be mapped. This procedure should be useful for operational use to analyze ISCCP data sets. (Auth.)

42-113
Life span of Arctic data buoys.
Muñoz, E.A., *Polarforschung,* 1986, 56(1/2), p.99-107, With German summary. 5 refs.
Weather stations, Remote sensing, Air temperature, Sea ice, Meteorological instruments.

42-114
Twenty-fourth Soviet Antarctic Expedition. General description of studies of the 1978-1980 winter seasons, with research results. [Dvadtsat' chetvertaia sovetskaia antarkticheskaia ekspeditsiia. Zimovochnye issledovaniia 1978-1980 gg. Obshchee opisanie i nauchnye rezul'taty],
Sovetskaia antarkticheskaia ekspeditsiia, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1986, No.81, 112p., In Russian. Refs. passim. For individual papers see 42-115 and 42-116 or P-36200, H-36201, I-36195 through I-36197, K-36198 and K-36199.
Artem'ev, A.N., ed, Dubrovin, L.I., ed.
Expeditions, Research projects, Antarctica.
This report on the 1978-1980 Soviet Antarctic Expedition provides, in pt.1, three chapters which describe the main activities, including the organization and the scientific observations, of the expedition. Pt.2 consists of 7 individual papers giving the scientific results of various projects.

42-115
Meteorological conditions at Druzhnaya Base in summer 1980. [Meteorologicheskie usloviia v raione bazy Druzhnoĭ letom 1980 g.],
Sokolov, S.T., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1986, No.81, p.63-77, In Russian. 7 refs.
Meteorological data, Meteorological factors, Ice shelves, Antarctica—Weddell Sea, Antarctica—Ronne Ice Shelf, Antarctica—Filchner Ice Shelf, Antarctica—Antarctic Peninsula.
Meteorological characteristics and synoptic processes over the southern Weddell Sea and the adjacent Filchner and Ronne ice shelves, in Jan.-Mar. 1980, are described. The data are compared with data obtained in previous years. Significant influence on the relatively mild climate of West Antarctica is attributed to topographic features of the area, such as the Pensacola Mountains, the mountains of the southern Antarctic Peninsula, and Berkner I.

42-116
Results of hole drilling with non-freezing fluid at Gornaia base. [Rezul'taty bureniia skvazhiny s primeneniem nizkotemperaturnoĭ zalivochnoĭ zhidkosti na baze Gornoĭ],
Bobin, N.E., et al, *Sovetskaia a... arkticheskaia ekspeditsiia. Trudy,* 1986, No.81, p.93-101, In Russian.
Moiseev, B.S., Zemtsov, A.A.
Drilling fluids, Thermal drills, Ice drills, Borehole instruments.
Experimental drilling on Gornaia base, 73rd km on the Mirnyy-Vostok route, is reported. A thermal drill filled with non-freezing fluid used for boreholes in ice, and the installation of the portable borehole equipment, are described and illustrated. The operational capabilities of the drill are found to be highly satisfactory; its mechanical speed is reported to surpass 2 m/h.

42-117
Microclimate of sport stadium structures. [Mikroklimat sportivnykh sooruzheniĭ],
Aliev, F.G., Moscow, Strofizdat, 1986, 296p., In Russian with abridged English table of contents enclosed. 56 refs.
Artificial ice, Temperature control, Microclimatology, Design, Buildings, Floors, Mathematical models, Basements, Frost penetration.

42-118
Katabatic winds in Adélie Land.
Kodama, Y., Fairbanks, University of Alaska, 1985, 191p., University Microfilms order No.87-04873, Ph.D. thesis. Refs. p.181-191.
Climate, Blowing snow, Wind velocity, Snow air interface, Antarctica—Adélie Coast.
Data from Automatic Weather Stations (AWS) on Adélie Land were analyzed, showing the following: the high directional constancy of surface winds was found at the slope stations even in summer, when the inversion is weak or destroyed; synoptic geostrophic winds and eddy viscosity also affect the constancy of the wind direction in summer; wind directional constancies at the slope stations in winter are sometimes lower than the mean annual constancies. These low constancies are associated with warm air advection from maritime air brought into Adélie Land, when the continental anticyclonic ridge lies to the east of it. There is a superadiabatic surface temperature change between the high plateau and intermediate plateau stations, which could be of importance for surface flow when the buoyancy component is balanced or nearly balanced by an increase in depth of the katabatic wind layer. The entrainment of blowing snow particles increases the density of the katabatic flow layer by 2 mechanisms: the addition of snow particles to the air column, and the sublimation of the snow particles. This increase in density in the katabatic flow layer leads to increased wind speed, which occurs primarily at wind speeds exceeding 12 m/s when there is, usually, a large amount of blowing snow. (Auth. mod.)

42-119
19th General Assembly, Vancouver, Canada, Aug. 9-22, 1987. Programme and abstracts.
International Union of Geodesy and Geophysics, 1987, 4 vols.
Clouds (meteorology), Albedo, Ice edge, Polynyas, Ice shelves, Snow, Ice models, Remote sensing, Sea ice, Aerosols, Ice cover, Polar regions, Climatic factors, Ice air interface, River ice, Erosion.
A collection of abstracts of papers presented at numerous symposia in a wide variety of disciplines, the three abstract volumes contain approximately 50 items relating to Antarctica and numerous papers on other cold-regions phenomena. Abstracts pertinent to the Antarctic are in the following categories: oceanography (p.147-148); glaciology (p.147-148, 150-151, 861-862); terrestrial physics (p.695-696); atmospheric physics (p.697-700); and meteorology (p.859-860, 863-864, 883).

42-120
Deterioration of woods and avalanche danger. [Il deperimento dei boschi e il pericolo di valanghe],
Meyer-Grass, M., et al, *Neve e valanghe,* Dec. 1986, No.4, p.6-15, In Italian.
Imbeck, H.
Avalanche formation, Forest land, Snow fences, Countermeasures.

42-121
April 1986 precipitation in Italian Switzerland. [Le precipitazioni dell'aprile 1986 nella Svizzera italiana],
Spinedi, F., et al, *Neve e valanghe,* Dec. 1986, No.4, p.16-21, 3 refs., In Italian.
Kappenberger, G.
Snow cover distribution, Snowfall, Avalanche formation, Precipitation (meteorology).

42-122
Avalanche localization on Monte Baldo. [La localizzazione delle valanghe sul Monte Baldo],
Benciolini, G., *Neve e valanghe,* Dec. 1986, No.4, p.22-27, 6 refs., In Italian.
Avalanche deposits, Avalanche formation, Mountains, Italy—Baldo Mountain.

42-123
Field evaluation of snow cover stability by empirical methods. [Valutazione sul terreno della stabilità del manto nevoso con metodi empirici],
Peretti, G., *Neve e valanghe,* Dec. 1986, No.4, p.28-39, In Italian.
Snow cover stability, Avalanche formation, Sounding, Tests.

42-124
Considerations concerning the use of environmental impact statements. [Riflessioni sull'utilizzo della Valutazione di Impatto Ambientale],
Di Salvatore, F., *Neve e valanghe,* Dec. 1986, No.4, p.40-47, In Italian.
Avalanche formation, Snow fences, Environmental impact, Countermeasures.

42-125
Snow depth measurements by the echometric method. [La misura di altezza del manto nevoso con il metodo ecometrico],
Cagnati, A., *Neve e valanghe,* Dec. 1986, No.4, p.48-51, In Italian.
Snow depth, Snow accumulation, Echo sounding, Measuring instruments, Ultrasonic tests, Temperature effects.

42-126
Wave drift force on ice floe.
Kobayashi, N., et al, *Journal of waterway, port, coastal, and ocean engineering,* Sep. 1987, 113(5), p.476-492, 22 refs.
Frankenstein, S.
Ice floes, Drift, Ocean waves, Loads (forces), Analysis (mathematics), Ice air interface.

42-127
Added mass and damping for ice floes by long water wave theory.
Luk, C.H., *Journal of waterway, port, coastal, and ocean engineering,* Sep. 1987, 113(5), p.523-539, For another source see 38-638. 8 refs.
Ice floes, Ocean waves, Offshore structures, Impact strength, Hydrodynamics, Analysis (mathematics), Water waves.

42-128
Protection of communication lines and construction of a large hydroelectric mountain plant by local forecasting of avalanche danger. [Protection des voies de communication et des travaux d'un grand chantier en montagne, par prévision localisée du risque d'avalanche],
Meffre, J.F., *Neige et avalanches,* May 1987, No.43, p.19-34, In French.
Avalanche formation, Transmission lines, Forestry, Protection, Mountains, Safety.

42-129
Arsine glacial lake; study of danger and protective measures. [Lac du glacier d'Arsine; étude de risque et travaux de protection],
Van Effenterre, C., *Neige et avalanches,* May 1987, No.43, p.35-44, In French with English summary. 14 refs.
Glacial lakes, Moraines, Avalanche formation, Protection, France—Arsine, Lake.

42-130
Artificial intelligence and forecasting avalanche danger. [Intelligence artificielle et prevision du risque d'avalanche],
Giraud, G., *Neige et avalanches,* May 1987, No.43, p.45-52, In French. 5 refs.
Avalanche forecasting, Avalanche formation, Countermeasures, Damage.

42-131
Consideration of avalanches in risk assessment plans. [La prise en compte des avalanches dans les P.E.R.],
Besson, L., et al, *Neige et avalanches,* May 1987, No 43, p.53-56, In French.
Marie, R.
Avalanche formation, Snow mechanics, Snow density, Protection, Safety.

42-132
New touristic units, mountain committees and avalanches. [Les U.T.N., les comités de massif et les avalanches],
Crecy, L. de, *Neige et avalanches,* May 1987, No.43, p.57-62, In French.
Avalanches, Mountains, Organizations, Prevention, Safety.

42-133
Avalanche cartography course for our foreign friends. [Un stage cartographie d'avalanches pour nos amis etrangers],
Valla, F., *Neige et avalanches,* May 1987, No.43, p.63-64, In French.
Avalanche tracks, Mapping, Charts, Avalanche formation.

42-134
Spectral signatures of soil, snow and sea ice as observed by passive microwave and thermal infrared techniques.
Schmugge, T., International Colloquium Spectral Signatures of Objects in Remote Sensing, 2nd, Bordeaux, France, Sep. 12-16, 1983. Proceedings, Les Colloques de l'INRA, No.23, Paris, Institut national de la recherche agronomique, 1984, p.749-762, With French summary. 20 refs.
Ice spectroscopy, Snow electrical properties, Soil water, Remote sensing, Sea ice, Microwaves, Infrared spectroscopy, Brines, Snow water content, Dielectric properties.

42-135
On the surging potential of polar ice streams. Antarctic surges—a clear and present danger?.
Radok, U., *U.S. Department of Energy. Report,* July 1987, DOE/ER/60197-H1, 62p., Refs. p.58-60.
Ice sheets, Glacier mass balance, Glacier surges, Models.
Antarctic ice streams typically move hundreds of meters in a year. An investigation was carried out to determine whether polar ice streams, like some mountain glaciers, can accelerate their motion from time to time by one or two orders of magnitude in the span of a few years, with appreciable effects on global sea level. Mass gains and losses of the antarctic ice sheet as a whole closely balance one another. The working hypothesis that they do so exactly was used to construct three-dimensional steady-state fields of ice velocity and temperature in broad agreement with the as yet very scant observational record for the ice sheet. Next a numerical model which links the sliding motion of the ice to the energy dissipated by the friction between the ice and the underlying rock, was used to simulate the time-dependent behavior of 8 ice streams representing the full range of antarctic conditions. In contrast to the realistic alternation between fast advances and stagnating retreats which the model had produced for some mountain glaciers known to surge, the modeled ice streams instead went from steady to irregular continuous fast sliding when the prescribed ice deformability was reduced and/or the implied lubrication by frictional heating was increased. Substantial rapid advances did not develop, except as transient phases in two experiments. Possible reasons for the results obtained are presented and discussed. (Auth.)

42-136
Modeling and diagrams of gap zones with surface dispersal of supercooled fogs.
Khvorost'ianov, V.I., *Soviet meteorology and hydrology,* 1986, No.3, p.23-30, Translated from Meteorologiia i gidrologiia. 15 refs.
Supercooled fog, Fog dispersal, Mathematical models.

42-137
Dispersion and structure of ice-forming aerosols from compounds with a low AgI content.
Beliaev, S.P., et al, *Soviet meteorology and hydrology*, 1986, No.3, p.31-35, Translated from Meteorologiia i gidrologiia. 8 refs.
Smoke generators, Silver iodide, Ice formation, Aerosols.

42-138
Determining moisture reserves in the snow cover, soil and air by cosmic ray neutrons.
Avdiushin, S.I., et al, *Soviet meteorology and hydrology*, 1986, No.3, p.43-47, Translated from Meteorologiia i gidrologiia. 9 refs.
Snow water equivalent, Water reserves, Soil water, Humidity, Measuring instruments.

42-139
Mineralization of the snow cover.
Fedoseeva, V.I., et al, *Soviet meteorology and hydrology*, 1986, No.4, p.59-62, Translated from Meteorologiia i gidrologiia. 15 refs.
Makarov, V.N., Fedoseev, N.F.
Snow cover distribution, Snow impurities, Snow composition, Minerals, Snow depth, Migration, Salinity, Air pollution, Soil pollution.

42-140
Calculation and prediction of rafted ice thickness in navigable regions of the northwestern Caspian sea.
Bukharitsin, P.I., *Soviet meteorology and hydrology*, 1986, No.4, p.69-74, Translated from Meteorologiia i gidrologiia. 10 refs.
Sea ice distribution, Ice cover thickness, Drift, Pressure ridges, Ice pileup, Ice navigation, Ice forecasting, Ice reporting, USSR—Caspian Sea.

42-141
Annular blade for snow shear tests.
Samoilov, R.S., *Soviet meteorology and hydrology*, 1986, No.4, p.89-93, Translated from Meteorologiia i gidrologiia. 11 refs.
Snow physics, Shear strength, Test equipment, Snow samplers.

42-142
Adjustment of air pressure to sea level in winter in mountain regions of Siberia.
Arkhangel'skiĭ, V.L., *Soviet meteorology and hydrology*, 1986, No.5, p.99-102, Translated from Meteorologiia i gidrologiia. 17 refs.
Atmospheric pressure, Sea level, Mountains, Topographic effects, Meteorological data.

42-143
Calculation of evaporation from lakes in swamps of the northern area of western Siberia.
Novikov, S.M., et al, *Soviet meteorology and hydrology*, 1986, No.6, p.64-68, Translated from Meteorologiia i gidrologiia. 10 refs.
Moskvina, G.I.
Lakes, Swamps, Permafrost beneath lakes, Surface temperature, Surface waters, Evaporation.

42-144
Battle against frost by dynamic action on the surface air layer.
Vol'vach, V.V., et al, *Soviet meteorology and hydrology*, 1986, No.7, p.89-95, Translated from Meteorologiia i gidrologiia. 13 refs.
Mamaev, E.V., Matukhno, V.N.
Air temperature, Frost protection, Turbulent boundary layer, Heat transfer, Soil air interface, Hoarfrost, Frostbite, Soil temperature, Turbulent exchange, Countermeasures, Surface temperature.

42-145
Formation conditions of snow avalanches in the area of the Novokuznetsk-Abakan railroad.
Chubenko, A.G., *Soviet meteorology and hydrology*, 1986, No.7, p.104-106, Translated from Meteorologiia i gidrologiia. 5 refs.
Avalanche formation, Snow cover distribution, Snow depth, Snow cover stability, Wet snow, Avalanche triggering.

42-146
Asynchronous relationships between temperature anomalies of the North Atlantic and Arctic.
Krasovskiĭ, IU.P., *Soviet meteorology and hydrology*, 1986, No.9, p.40-46, Translated from Meteorologiia i gidrologiia. 5 refs.
Oceanographic surveys, Ocean currents, Air water interactions, Heat transfer, Water temperature.

42-147
Estimate of cloud resources for their dispersion by cooling and crystallizing reagents over the southwestern European USSR.
Belova, L.K., et al, *Soviet meteorology and hydrology*, 1986, No.9, p.75-78, Translated from Meteorologiia i gidrologiia. 5 refs.
Volokitina, L.A., Litvinov, I.V.
Weather modification, Cloud dissipation, Cloud seeding, Nucleating agents, Ice crystal nuclei.

42-148
Laws of distribution of glaze and wind loads on aerial transmission lines.
Golikov, B.F., *Soviet meteorology and hydrology*, 1986, No.9, p.79-83, Translated from Meteorologiia i gidrologiia. 2 refs.
Power line icing, Ice accretion, Ice loads, Wind (meteorology), Statistical analysis.

42-149
Parameters of microelement flow with surface water in small river basins of the permafrost-taiga zone.
Makhon'ko, K.P., et al, *Soviet meteorology and hydrology*, 1986, No.11, p.71-77, Translated from Meteorologiia i gidrologiia. 5 refs.
Vertinskiĭ, IU.K.
Snowmelt, Forest soils, Microelement content, Water chemistry, Migration, River basins, Chemical composition, Permafrost distribution, Permafrost depth, Taiga.

42-150
Evaporation and radiation regime of raised marshes of western Siberia.
Moskvin, IU.P., *Soviet meteorology and hydrology*, 1986, No.11, p.78-81, Translated from Meteorologiia i gidrologiia. 14 refs.
Swamps, Permafrost distribution, Permafrost depth, Surface temperature, Radiation balance, Evaporation, Solar radiation.

42-151
Altitude variation of relative ice-forming activity of natural aerosol.
Berezinskiĭ, N.A., et al, *Soviet meteorology and hydrology*, 1986, No.12, p.86-89, Translated from Meteorologiia i gidrologiia. 9 refs.
Stepanov, G.V., Khorguani, V.G.
Cloud physics, Cloud dissipation, Aerosols, Ice formation, Nucleating agents.

42-152
Some features of a corona discharge from the surface of a melting hailstone.
Grigor'ev, A.I., *Soviet meteorology and hydrology*, 1987, No.1, p.57-63, Translated from Meteorologiia i gidrologiia. 20 refs.
Hailstones, Water films, Hailstone electrification, Electric corona.

42-153
Mathematical model of the transformation of lateral inflow and its use for calculating inflow into reservoirs of Siberian hydroelectric plants.
Zhorov, V.A., *Soviet meteorology and hydrology*, 1987, No.1, p.76-82, Translated from Meteorologiia i gidrologiia. 11 refs.
Mathematical models, Reservoirs, Water flow, Electric power, Permafrost beneath lakes.

42-154
Simulation model for high-frequency under-ice reverberation.
Bishop, G.C., et al, *Acoustical Society of America. Journal*, July 1987, 82(1), p.275-286, 57 refs.
Ellison, W.T., Mellberg, L.E.
Subglacial observations, Ice bottom surface, Underwater acoustics, Ice cover effect.

42-155
Study of reflection and refraction of waves at the interface of water and porous sea ice.
Yew, C.H., et al, *Acoustical Society of America. Journal*, July 1987, 82(1), p.342-353, 18 refs.
Weng, X.
Subglacial observations, Ice bottom surface, Ice cover effect, Underwater acoustics.

42-156
ARAMIS remote sensing system.
Turner, J., *British Antarctic Survey. Bulletin*, Aug. 1987, No.76, p.75-85, 5 refs.
Meteorology, Ice, Remote sensing, Computer applications, Antarctica.
An account is given of the ARAMIS (Antarctic Research in Applied Meteorology, Imaging and Sounding) remote sensing system which has recently been installed in the Ice and Climate Division of the British Antarctic Survey. Details of the hardware are provided along with information on the applications software available to the users. Current meteorological remote sensing research being carried out on the system is outlined and possible applications for other disciplines are described. (Auth.)

42-157
Comparison between wet and dry oxidation methods for total nitrogen analysis of antarctic peat samples.
Christie, P., *British Antarctic Survey. Bulletin*, Aug. 1987, No.76, p.87-90, 9 refs.
Mosses, Peat, Plant ecology, Nutrient cycle, Signy Island.
Between 1969 and 1981 an intensive study of ecosystem processes in two contrasting bryophyte communities on Signy I., South Orkney Is., was undertaken by numerous biologists. The two study sites were a semi-ombrogenous, relatively dry and well-drained moss turf community and a soligenous poorly-drained moss carpet community. During an 18-month study of the nitrogen dynamics of these sites core samples were collected at monthly intervals. The core collected from Sep. 1978 to Mar. 1979 were oven dried, and ground subsamples were analyzed and wet digestion followed by colorimetry. Organic carbon (C) was also determined using dry combustion. This paper compares the accuracy and precision of the two methods of analysis for total N content of peat. (Auth.)

42-158
Overcoming the impossible: hydro-mechanization under severe conditions of Siberia. [Preodolenie nevozmozhnogo: gidromekhanizatsiia v ekstremal'nykh usloviiakh Sibiri],
Okun'kova, T.V., *Transportnoe stroitel'stvo*, June 1987, No.6, p.26-28, In Russian.
Roads, Railroads, Continuous permafrost, Paludification, Dredging, Construction equipment, Dams, Embankments, Hydraulic structures, Foundations.

42-159
Improving the technology of frozen ground excavation by the slit-blasting method. [Sovershenstvovanie tekhnologii shchelevzryvnogo rykhleniia merzlykh gruntov],
IUrko, A.A., *Transportnoe stroitel'stvo*, July 1987, No.7, p.5-6, In Russian. 1 ref.
Earthwork, Frozen ground, Blasting, Explosives, Analysis (mathematics).

42-160
Computerized design of borehole-blasting excavation. [Avtomatizirovannoe proektirovanie burovzryvnykh rabot],
Meerson, V.I., et al, *Transportnoe stroitel'stvo*, July 1987, No.7, p.6-7, In Russian.
Brodova, O.E.
Earthwork, Permafrost, Blasting, Excavation, Frozen rock strength, Research projects, Computer applications.

42-161
Peculiarities of using electrometric techniques in studying dams. [Osobennosti elektrometricheskogo obsledovaniia nasypeĭ],
Prigoda, V.IA., *Transportnoe stroitel'stvo*, July 1987, No.7, p.7-9, In Russian. 2 refs.
Embankments, Soil strength, Roadbeds, Earth dams, Electrical measurement, Foundations, Peat, Railroads, Organic soils, Loads (forces), Settlement (structual).

42-162
Pilework-free supports for river channels. [Ruslovye bezrostverkovye opory],
Pyshko, L.V., *Transportnoe stroitel'stvo*, July 1987, No.7, p.17-19, In Russian.
Roads, Bridges, Supports, Earthquakes, Ice loads, Ice cover thickness, Permafrost beneath structures, Concrete structures, Piers, Reinforced concretes, Frost resistance.

42-163
Far North: peculiarities of mooring construction. [Kraĭnīĭ Sever: Osobennosti stroitel'stva prichalov],
Sokolov, V.V., et al, *Transportnoe stroitel'stvo*, July 1987, No.7, p.22-23, In Russian.
Gerasimova, E.I., Sokolov, A.V., Braginskiĭ, A.M.
Steel structures, Concrete structures, Moorings, Reinforced concretes, Winter concreting, Sea ice distribution, Ice cover thickness, Embankments, Rock fills, Earth fills, Ice (construction material), Northern Sea Route, Petroleum industry.

42-164
Chemical admixtures for structural lightweight aggregate concrete. [Khimicheskie dobavki dlia keramzitobetona],
Fedorov, V.A., *Transportnoe stroitel'stvo*, July 1987, No.7, p.26-27, In Russian.
Lightweight concretes, Concrete admixtures, Air entrainment, Frost resistance, Concrete structures.

42-165
Rapid method of determining frost resistance of stone. [Uskorennyĭ sposob opredeleniia morozostoĭkosti kamennykh materialov]
Tsvetkov, V.S., et al, *Transportnoe stroitel'stvo*, July 1987, No.7, p.27-28, In Russian.
Tishkin-Kurdenkov, V.F., Nesterova, L.P.
Construction materials, Masonry, Gravel, Frost resistance.

42-166
Arctic: the Canadian approach. [Arktika: kanadskiĭ podkhod]
Arikaĭnen, A., *Morskoĭ flot*, 1987, No.6, p.34-36, In Russian.
Ice navigation, Ships, Icebreakers, Transportation, Frozen cargo.

42-167
Make the permafrost an ally. [Vziat' v soiuzniki vechnuiu merzlotu]
Ivantsov, O.M., *Stroitel'stvo truboprovodov*, June 1987, No.6, p.12-16, In Russian.
Continuous permafrost, Gas pipelines, Permafrost control, USSR—Yamal Peninsula.

42-168
Resistance of pressure-contact welds to brittle failure. [Soprotivliaemost' khrupkomu razrusheniiu soedinenii vypolnennykh kontaktnoĭ svarkoĭ]
Makarenko, V.D., et al, *Stroitel'stvo truboprovodov*, July 1987, No.7, p.25-29, In Russian. 4 refs.
Izvekov, IU.G., Shatilo, S.P.
Pipelines, Welding, Joints (junctions), Brittleness, Frost resistance, Steel structures.

42-169
Preliminary engineering work on oil fields of the Central Ob' River area. [Inzhenernaia podgotovka territorii pri obustroĭstve neftianykh mestorozhdeniĭ Srednego Priob'ia]
Eshkind, S.A., *Stroitel'stvo truboprovodov*, July 1987, No.7, p.36-37, In Russian.
Petroleum industry, Earthwork, Roads, Embankments, Foundations, Permafrost beneath structures, Frozen fines.

42-170
Ecotopologic characteristics of meadow communities in flood plains of the lower Ob' River. [Ekotopologicheskaia kharakteristika lugovykh soobshchestv poĭmy nizov'ev Obi]
Gafurov, F.G., et al, *Ekologiia*, May-June 1987, No.3, p.73-75, In Russian. 5 refs.
Skulkin, I.M.
Floodplains, Permafrost beneath rivers, Permafrost depth, Cryogenic soils, Soil composition, Plant ecology, Ecosystems, Water level.

42-171
Estimating the resistance of natural cryolithozone environments to industrial activities. [Otsenka ustoĭchivosti prirodnoĭ sredy raĭonov kriolitozony k tekhnogennym vozdeĭstviiam]
Stashenko, A.I., *Geograficheskoe obshchestvo SSSR. Izvestiia*, July-Aug. 1987, 119(4), p.301-306, In Russian. 8 refs.
Permafrost distribution, Permafrost structure, Ice lenses, Ice wedges, Frozen rock temperature, Heat flux, Permafrost thermal properties, Deformation, Human factors.

42-172
Ice adhesion to road pavements and ways of decreasing it. [Adgeziia l'da k dorozhnym pokrytiiam i puti ee umen'sheniia]
Korolev, I.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1987, No.6, p.93-96, In Russian. 4 refs.
Kasymov, A.K.
Pavements, Chemical ice prevention, Winter maintenance, Bituminous concretes, Icing, Friction, Ice adhesion, Countermeasures.

42-173
Field tests of rippers with stepped cutting tools. [Ekspluatatsionnye ispytaniia rykhlitelia s rabochim organom stupenchatogo tipa]
Khmara, L.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1987, No.6, p.104-107, In Russian.
Shatov, S.V.
Earthwork, Excavation, Construction equipment, Frozen ground strength.

42-174
Mathematical model of the continuous process of heating concrete mixtures in conveying pipes equipped with spiral electrodes. [Matematicheskoe opisanie protsessa nepreryvnogo nagreva betonnoĭ smesi v transportiruiushcheĭ trube s vintovymi elektrodami]
Pshonkin, N.G., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1987, No.6, p.117-119, In Russian. 2 refs.
Winter concreting, Concrete heating, Transportation, Concrete placing.

42-175
Influence of the land surface on climate. [Rol' poverkhnosti sushi v formirovanii klimata]
Krenke, A.N., ed, *Materialy meteorologicheskikh issledovaniĭ*, 1986, No.10, 124p., In Russian. For selected papers see 41-176 through 41-179. Refs. passim.
Savina, S.S., ed.
Evaporation, Wind factors, Atmospheric circulation, Topographic effects, Heat balance, Hydrothermal processes, Glaciation, Frost penetration, Landscape types, Remote sensing, Taiga, Paleoclimatology, Analysis (mathematics), Steppes, Paleoecology, Swamps, Erosion.

42-176
Interrelation between atmospheric circulation, relief and glaciation in northeastern USSR in the past and present, according to glaciological and hydrodynamic calculations. [Vzaimosviaz' tsirkuliatsii atmosfery, rel'efa i oledeneniia na severo-vostoke SSSR v nastoiashchem i proshlom soglasno gliatsiologicheskim i gidrodinamicheskim raschetam]
Krenke, A.N., et al, *Materialy meteorologicheskikh issledovaniĭ*, 1986, No.10, p.7-17, In Russian. 14 refs.
Mikhaĭlov, A.IU.
Atmospheric circulation, Topographic effects, Glaciation, Paleoclimatology, Paleoecology, Erosion, Wind factors, Hydrothermal processes.

42-177
Relations between the evaporation from forest and swamp-meadow geosystems in southern Tyumen' Region. [Sootnosheniia mezhdu isparieniem lesnykh i bolotno-lugovykh geosistem v iuzhnoĭ chasti Tiumenskoĭ oblasti]
Abdullaev, A.A., *Materialy meteorologicheskikh issledovaniĭ*, 1986, No.10, p.83-87, In Russian. 15 refs.
Taiga, Steppes, Evaporation, Heat balance, Seasonal freeze thaw, Soil freezing, Frost penetration.

42-178
Methods of calculating dynamics of thermal regime of soil in winter. [Metodika rascheta dinamiki termicheskogo rezhima pochvy v zimniĭ period]
Gusev, E.M., et al, *Materialy meteorologicheskikh issledovaniĭ*, 1986, No.10, p.87-100, In Russian. 16 refs.
IAsinskiĭ, S.V.
Soils, Freeze thaw cycles, Heat balance, Soil profiles, Landscape types, Analysis (mathematics).

42-179
Estimating the evaporation from forest and paluded lands of western Siberia from remote sensing data. [Otsenka isparenilia lesnykh i zabolochennykh landshaftov Zapadnoĭ Sibiri na osnove distantsionnogo eksperimenta]
Anan'ev, I.P., *Materialy meteorologicheskikh issledovaniĭ*, 1986, No.10, p.109-115, In Russian. 10 refs.
Forest land, Paludification, Evaporation, Remote sensing, Analysis (mathematics).

42-180
Ocean drilling details steps to an icy world.
Kerr, R.A., *Science*, May 22, 1987, Vol.236, p.912-913.
Ice volume, Paleoecology, Ice formation, Paleoclimatology, Glaciation, Ice sheets, Glacial deposits, Ice rafting, Antarctica—Weddell Sea.
Shipboard analyses of sediment cores, collected by the deep-sea drilling ship *Resolution* from the bottom of the Weddell Sea, appear to support the theory that Antarctica was unglaciated before 40 m.y.a. This evidence, which runs counter to suggestions by some researchers who claim major ice sheets covered Antarctica earlier than 40 m.y.r., is discussed along with a review of antarctic morphological and climatological changes over the millennia.

42-181
Study of the inhomogeneous deformation in a glacier —investigation on the artificial tunnel, Part 3.
Huang, M., et al, *Journal of glaciology and geocryology*, 1986, 8(4), p.327-332, 3 refs., In Chinese with English summary.
Wang, Z.
Glacier ice, Ice deformation, Shear strain, Statistical analysis.

42-182
Glacier variations in Himalayas and Karakorum.
Röthlisberger, F., et al, *Journal of glaciology and geocryology*, 1986, 8(4), p.333-342, 30 refs. For another version see 40-1856., In Chinese with English summary.
Geyh, M.A.
Glacier oscillation, Radioactive age determination, Fossils, Moraines, Himalaya Mountains, Kashmir—Karakoram Mountains.

42-183
Some periglacial phenomena in north-western Europe.
Wang, J., et al, *Journal of glaciology and geocryology*, 1986, 8(4), p.345-356, 19 refs., In Chinese with English summary.
Derbyshire, E.
Periglacial processes, Glaciation, Permafrost, Sediments, Ice wedges, Pleistocene, Grain size, Eolian soils.

42-184
Frozen ground in the Altay Mountains of China.
Tong, B., et al, *Journal of glaciology and geocryology*, 1986, 8(4), p.357-364, 10 refs., In Chinese with English summary.
Li, S., Zhang, T.
Permafrost distribution, Active layer, Frozen ground, Glaciation, Mountains, Climatic factors, Permafrost thickness, Permafrost thermal properties, China—Altay Mountains.

42-185
Uniaxial compressive strength of frozen silt under constant deformation rates.
Zhu, Y., *Journal of glaciology and geocryology*, 1986, 8(4), p.365-380, 9 refs., In Chinese with English summary.
Frozen ground strength, Compressive properties, Stress strain diagrams, Density (mass/volume), Temperature effects, Tests, Deformation.

42-186
Dry-snow avalanche in China.
Wang, Y., *Journal of glaciology and geocryology*, 1986, 8(4), p.381-387, 4 refs., In Chinese with English summary.
Avalanche mechanics, Avalanche formation, Snow water content, Snow depth, Temperature effects, Snowfall, Air temperature.

42-187
Study on the geneses of some Quaternary diamictons in Luojie Mt. area, Sichuan.
He, Y., *Journal of glaciology and geocryology*, 1986, 8(4), p.389-396, 4 refs., In Chinese with English summary.
Quaternary deposits, Geomorphology, Sediments, Geology, Grain size, Statistical analysis, China—Luojie Mountain.

42-188
Particle-size features and sedimental environment of the gold-containing sandy sediments in the north of the Daxinanlin Ridge.
Zhang, B., *Journal of glaciology and geocryology*, 1986, 8(4), p.397-402, 4 refs., In Chinese with English summary.
Glacial deposits, Grain size, Sediments, Glaciation, Metals, Dispersions, China—Daxinanlin Ridge.

42-189
Preliminary analyses of the release causes for wet-snow avalanches in the Kunas Valley, Tianshan Mountains.
Zhang, Z., *Journal of glaciology and geocryology*, 1986, 8(4), p.403-408, In Chinese with English summary.
Avalanche formation, Wet snow, Avalanche forecasting, Temperature gradients, Air temperature, Snow temperature, Snow water content, China—Kunas Valley.

42-190
Permafrost found on Maxian Mountains near Lanzhou.
Li, S., *Journal of glaciology and geocryology*, 1986, 8(4), p.409-410, 3 refs., In Chinese.
Permafrost distribution, Permafrost depth, Mountains, Climatic factors, China—Maxian Mountains.

42-191
Discussion about ice ages in China.
Ding, S., *Journal of glaciology and geocryology,* 1986, 8(4), p.411-416, In Chinese.
Glaciation, Quaternary deposits, Pleistocene, Paleoclimatology, China.

42-192
Ocean optics 8.
Blizard, M.A., ed, *SPIE—The International Society for Optical Engineering. Proceedings,* 1986, Vol.637, 373p., Refs. passim. For selected papers see 42-193 through 42-197.
Sea water, Optical properties, Ice optics, Snow optics, Meetings, Albedo, Spectroscopy, Models.

42-193
Optical properties of ice and snow in the polar oceans. 1. Observations.
Perovich, D.K., et al, *SPIE—The International Society for Optical Engineering. Proceedings,* 1986, Vol.637, MP 2255, Ocean optics 8. Edited by M.A. Blizard, p.232-241, 38 refs.
Maykut, G.A., Grenfell, T.C.
Ice optics, Snow optics, Sea ice, Brines, Albedo, Scattering, Ice spectroscopy, Ice cover effect, Temperature effects.
Optically sea ice is a complex material with an intricate and highly variable structure which includes brine pockets, air bubbles, brine channels and internal platelet boundaries. Large variations in the optical properties of the surface layer can occur on horizontal scales of only a few meters, complicating efforts to quantify larger scale interactions between shortwave radiation and the ice-ocean system. Radiative transfer in sea ice is dominated at visible wavelengths by scattering rather than absorption. Because scattering in the ice is essentially independent of wavelength, spectral variations in the optical properties are primarily the result of differences in absorption. Observations show that albedos are particularly sensitive to the presence of liquid water in the surface layers, the effect being most pronounced at wavelengths above 600 nm. Albedos and extinction coefficients in the ice vary inversely with brine volume, and thus temperature. Below the eutectic point, precipitation of solid salts causes a sharp increase in scattering and corresponding increases in albedo and absorption. Biological activity in natural sea ice often affects light transmission and absorption, particularly in coastal regions and in the southern ocean. Phase function measurements indicate that the scattering distribution in sea ice is only weakly dependent on wavelength and brine volume.

42-194
Optical properties of ice and snow in the polar oceans. 2. Theoretical calculations.
Grenfell, T.C., et al, *SPIE—The International Society for Optical Engineering. Proceedings,* 1986, Vol.637, MP 2256, Ocean optics 8. Edited by M.A. Blizard, p.242-251, 25 refs.
Perovich, D.K.
Ice optics, Snow optics, Sea ice, Analysis (mathematics), Albedo, Solar radiation, Ice microstructure, Brines, Temperature effects, Grain size.
Radiative transfer models of sea ice applied to date range from a simple Bouguer-Lambert representation for net downwelling irradiance through 16 stream models which takes into account detailed variations in ice microstructure. Both sea ice and snow are strongly multiple scattering media with single scattering albedos well above 0.9 through the visible and into the near infrared. Parameter studies indicate that the optical properties of sea ice are controlled by the density of brine and vapor inclusions which in general undergo substantial seasonal changes. Melting and brine drainage are the principal causes of these variations. For ice below -5 C, temperature effects are relatively weak unless the T(ice) drops below the eutectic point. The optical properties of snow depend primarily on grain size, the bulk density, and the presence of impurities such as carbon soot. The theoretical models appear to be able to reproduce observations quite well and have revealed that soot or dust contamination of snow appears to be prevalent even in the Arctic.

42-195
***In-situ* measurements of the optical properties of Arctic sea ice.**
Gilbert, G.D., et al, *SPIE—The International Society for Optical Engineering. Proceedings,* 1986, Vol.637, Ocean optics 8. Edited by M.A. Blizard, p.252-263, 15 refs.
Buntzen, R.R.
Ice optics, Sea ice, Ice cores, Subglacial observations, Ice crystal structure, Albedo, Ice cover effect, Models, Temperature distribution, Attenuation.

42-196
Optical characterization of sea ice structure using polarized light techniques.
Gow, A.J., *SPIE—The International Society for Optical Engineering. Proceedings,* 1986, Vol.637, MP 2257, Ocean optics 8. Edited by M.A. Blizard, p.264-271, 11 refs.
Ice optics, Recrystallization, Ice structure, Sea ice, Polarization (waves), Ice crystal structure, Brines, Ice crystal size, Light transmission, Reflection, Ice salinity, Ice temperature.
Optical properties of sea ice depend to a greater or lesser extent on its crystalline properties and on the size, shape, and distribution of brine inclusions systematically trapped in the ice crystals. The use of polarized light techniques was demonstrated to examine the internal structure of sea ice. Using both naturally occurring and laboratory simulated sea ice we show how the crystalline and salinity components originate including discussion of the mechanisms by which first-year ice desalinates and recrystallizes into multi-year ice exhibiting optical properties significantly different from those of first-year ice.

42-197
Coastal Zone Color Imagery of phytoplankton pigment distribution in Icelandic waters.
Clark, D.K., et al, *SPIE—The International Society for Optical Engineering. Proceedings,* 1986, Vol.637, Ocean optics 8. Edited by M.A. Blizard, p.350-357, 13 refs.
Maynard, N.G.
Plankton, Ice edge, Sea water, Marine biology, Optical properties, Seasonal variations, Iceland.

42-198
Alaska Coastal Data Collection Program: 1983 program plan, 21 July 1982 [and] data report, Nos. 2 and 3.
Alaska. Department of Transportation and Public Facilities, Anchorage, Alaska, U.S. Army Engineer District, Dec. 1984, 3 pieces, Refs. passim.
U.S. Army Engineer District, Alaska.
Wind velocity, Ocean waves, Meteorological data, Weather stations, Research projects, Statistical analysis, Shores, United States—Alaska.

42-199
Chemical composition of fresh snow on Mount Everest.
Jenkins, M.D., et al, *Journal of geophysical research,* Sep. 20, 1987, 92(D9), p.10,999-11,002, 4 refs.
Drever, J.I., Reider, R.G., Buchanan, T.
Snow composition. Chemical analysis, Dust, Everest, Mount.

42-200
***Drescheriella glacialis* gen.nov., sp. nov. (Copepoda, Harpacticoida) from antarctic sea ice.**
Dahms, H.-U., et al, *Polar biology,* 1987, 7(6), p.329-337, 12 refs.
Dieckmann, G.S.
Marine biology, Sea ice, Antarctica—Weddell Sea.
The diagnosis of a new genus *Drescheriella* belonging to the family Tisbidae and description of a new species *Drescheriella glacialis* sp. nov. are presented. Based on character differentiation of copepodite appendages it is suggested that *Drescheriella* gen. nov. is the apomorphic sister group of *Tisbe.* Live specimens of all developmental instars were found in the lower 20 cm of sea ice cores indicating that reproduction and development occur within the ice. The new species was the only harpacticoid inhabiting sea ice of the eastern Weddell Sea in varying abundance. (Auth.)

42-201
Frozen peat soils as foundations of structures. [Merzlye torfianye grunty kak osnovaniia sooruzhenii],
Roman, L.T., Novosibirsk, Nauka, 1987, 222p., In Russian with abridged English table of contents enclosed. Refs. p.210-220.
Organic soils, Peat, Soil freezing, Soil structure, Soil physics, Soil strength, Freeze thaw cycles, Soil mechanics, Foundations, Buildings, Permafrost thermal properties, Active layer, Dynamic loads, Rheology, Deformation.

42-202
Parameters affecting the kinetic friction of ice.
Akkok, M., et al, *Journal of tribology,* July 1987, 109(3), MP 2258, p.552-561, Includes discussion by K. Itagaki and authors' closure. 19 refs.
Ettles, C.M.M., Calabrese, S.J., Itagaki, K.
Ice friction, Ice solid interface, Temperature effects.

42-203
Canadian Arctic tide measurement techniques and results.
Tait, B.J., et al, *International hydrographic review,* July 1986, 63(2), p.111-131, 28 refs.
Grant, S.T., St.-Jacques, D., Stephenson, F.
Tides, Tidal currents, Subglacial observations, Canada—Northwest Territories—Arctic Archipelago.

42-204
Simple analysis for the blowup phenomenon of inelastic members in compression.
Vielsack, P., *Journal of applied mechanics,* June 1987, 54(2), p.459-460, 3 refs.
Pressure ridges, Cracking (fracturing), Ice mechanics.

42-205
Numerical simulation of frost damage to brickwork.
Pande, G.N., et al, *British Ceramic,* May-June 1987, 86(3), p.71-74, 10 refs.
Mahdi, A.A.K.
Bricks, Frost action.

42-206
Patterns of air temperature and accumulation of snow in subalpine heathlands and grasslands on the Bogong High Plains, Victoria.
Williams, R.J., *Australian journal of ecology,* June 1987, 12(2), p.153-163, 30 refs.
Snow accumulation, Temperature effects, Microclimatology, Air temperature, Australia—Darg Plateau.

42-207
Effects of temperature on recrystallization in polycrystalline ice.
Martino, M., et al, *Sciences des aliments,* 1987, 7(1), p.147-166, With French summary. 35 refs.
Zaritzky, N.
Ice crystal growth, Recrystallization.

42-208
High toughness ERW pipes for arctic use.
Shimomura, T., et al, *Nippon Kokan technical report,* May 1987, No.49, p.19-28, 6 refs.
Pipes (tubes), Steels.

42-209
Methods of controlling seasonal soil freezing in Transbaikal. [Metody upravleniia sezonnym promerzaniem gruntov v Zabaikal'e],
Zheleznjak, I.I., et al, Novosibirsk, Nauka, 1987, 126p., In Russian with English table of contents enclosed. Refs. p.119-124.
Sarkisian, R.M.
Soil freezing, Soil composition, Cryogenic structures, Hydrothermal processes, Freeze thaw cycles, Cryogenic textures, Frost heave, Frost penetration, Frozen ground temperature, Frozen ground strength, Frost protection, Seasonal variations.

42-210
Proceedings of the 43rd annual Eastern Snow Conference, Hanover, NH, June 5 and 6, 1986.
Eastern Snow Conference, 1987, 243p., Refs. passim. For individual papers see 42-211 through 42-238.
Snow surveys, Ice surveys, Snowmelt, Ice composition, Snow impurities, Water chemistry, Ice physics, Cloud seeding, Meetings.

42-211
Studies of snowcover-permafrost relationships at Schefferville.
Granberg, H.B., et al, Eastern Snow Conference, 43rd, 1986. 1987, p.1-5, 30 refs.
Permafrost distribution, Snow cover effect, Heat balance, Snow stratigraphy, Snow temperature, Solar radiation, Interfaces, Equipment, Canada—Quebec—Schefferville.

42-212
Snowpack grain size stratification at Schefferville.
Granberg, H.B., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.6-10, 4 refs.
Wener, R.
Snow stratigraphy, Grain size, Particle size distribution, Snow cover, Interfaces, Canada—Quebec—Schefferville.

42-213
Real time streamflow forecasting using a snowmelt-index model and time series analysis techniques.
LaChance, J.C., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.11-25, 12 refs.
Stream flow, Snowmelt, Time factor, Forecasting, Models, Air temperature, Snow density, Flow rate, Indexes (ratios).

42-214
Optical snow precipitation gauge.
Koh, G., et al, MP 2259, Eastern Snow Conference, 43rd, 1986, 1987, p.26-31, 8 refs.
Lacombe, J.
Snowfall, Precipitation gages, Snow optics, Measuring instruments, Distribution.
The most common quantitative measurement of falling snow is the precipitation rate. The time resolution of conventional mechanical snow gauges is poor, and their accuracy in measuring light snowfall is severely limited. An optical device designed to give an accurate instantaneous measurement of rain rate has been modified to operate in falling snow. Snow rates are in-

ferred from statistical averages of intensity fluctuations caused by snow particles as they fall through a beam of light. Test results snow that the optical device is extremely sensitive to light snowfall and may be a significant improvement over mechanical techniques to measure snow precipitation rates.

42-215
Distribution of snow cover as influenced by landscape units in southwestern Ontario.
Schroeter, H.O., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.32-44, 9 refs.
Whiteley, H.R.
Snow cover distribution, Landscape types, Topographic features, Snow depth, Snow density, Snow surveys, Snow accumulation.

42-216
Comparative fluxes of strong-acid anions in melting snowpacks and surface waters during spring melt in a boreal forest.
Bédard, Y., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.45-54, 20 refs.
Jones, H.G.
Meltwater, Water chemistry, Snowmelt, Ground water, Seasonal variations, Ions, Watersheds.

42-217
Discharge measurement during river ice break-up.
Prowse, T.D., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.55-69, 29 refs.
Anderson, J.C., Smith, R.L.
River flow, Drift, Ice mechanics, River ice, Ice breakup, Monitors, Aerial surveys, Drainage, Ice floes.

42-218
Analysis of 112 years of ice conditions observed on the Ohio River at Cincinnati.
Daly, S.F., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.70-79, 10 refs.
Bilello, M.A.
River ice, Ice conditions, Hydrology, Watersheds, Statistical analysis, Degree days, Freezing, Dams, Locks (waterways), United States—Ohio River.
Daily ice conditions observed on the Ohio River at Cincinnati for the winters of 1874-75 through 1985-86 were analyzed. The amount of ice on the river, except during particularly cold winters, has decreased since 1900. The decline has been especially significant starting around 1930. Investigation of the severity of each winter, using the number of freezing degree-days as an index, revealed no systematic temperature trends over the 112 years of record. Associations between number of days with river ice and concurrent accumulated freezing degree-days over 10- or 11-winter increments were investigated. The results showed that between the winters of 1934-35 and 1963-64 considerably more freezing degree-days were required to produce ice, but the trend has reversed slightly since then. This decreasing trend in observed ice has occurred during a period of basin development, as indicated by a sample population, the construction of large locks and dams, and an increase in navigation tonnage on the river. The increase in heated discharge into the river corresponding with basin development and the construction of large locks and dams have probably had the most significant impacts.

42-219
Chemical, physical and structural characteristics of estuarine ice in Great Bay, New Hampshire: results of a two-year pilot study.
Meese, D.A., Eastern Snow Conference, 43rd, 1986, 1987, p.80-93, 19 refs.
Ice physics, Ice composition, Ice structure, Chemical analysis, Sea ice, Estuaries, Ice formation, Ice cores, Stratigraphy, Brines, United States—New Hampshire—Great Bay.

42-220
Resiliency and sensitivity of downhill skiing in Ontario to climatic change.
Harrison, R., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.94-105, 22 refs.
Ice strength, Ice models, Climatic factors, Snow cover effect, Models, Skis, Precipitation (meteorology), Temperature effects.

42-221
Snow as an instrument of pedagogy and self-actualization.
Kurtakko, K., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.106-110, 14 refs.
Lillberg, J.
Snow (construction material), Ice (construction material), Education.

42-222
Snowmaking techniques in the ski industry.
Barthold, S., Eastern Snow Conference, 43rd, 1986, 1987, p.111-122, 4 refs.
Artificial snow, Heat transfer, Ice nuclei, Skis, Dispersions, Air water interactions, Equipment.

42-223
Observations on the roles of snow and ice on the chemistry of an arctic lake.
Allan, C., Eastern Snow Conference, 43rd, 1986, 1987, p.123-138, 33 refs.
Lake water, Meltwater, Water chemistry, Snowmelt, Runoff, Lake ice, Ice surface, Drainage, Ice melting.

42-224
Field and modelling investigations of acid shock from snowmelt at Guelph.
Pakala, C.V., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.139-152, 15 refs.
Whiteley, H.R.
Snowmelt, Water chemistry, Meltwater, Snow impurities, Runoff, Mathematical models.

42-225
Effects of snowmelt on runoff coefficients in rural and urban watersheds.
Brown, R.G., Eastern Snow Conference, 43rd, 1986, 1987, p.153-157, 13 refs.
Runoff, Snowmelt, Watersheds, Frozen ground, Precipitation (meteorology), Drainage.

42-226
Strong responses of certain cloud types to cloud seeding for snowpack management.
Howell, W.E., Eastern Snow Conference, 43rd, 1986, 1987, p.158-162, 1 ref.
Cloud seeding, Snowfall, Cloud physics, Snow cover, Temperature effects, Weather modification.

42-227
Alcohol calorimetry for measuring the liquid water fraction of snow.
Fisk, D.J., MP 2261, Eastern Snow Conference, 43rd, 1986, 1987, p.163-166, 2 refs.
Snow water content, Temperature measurement, Snow ice interface, Unfrozen water content, Calorimeters, Latent heat, Ice volume, Specific heat, Measuring instruments.
Equipment and procedure have been devised for measuring the liquid water/ice ratio of snow. The measurement is based on the temperature depression observed on dissolving a 25 g snow sample at 0 C in 80 g methanol at 0 C. The masses of the sample and alcohol are held constant, and the heat of solution of 25 g water in 80 g methanol at zero deg is constant, so the only variable is the water/ice ratio in the sample. The solution process occurs quickly enough that it is essentially adiabatic. The latent heat of fusion of up to 8.3 g ice is supplied by the heat of solution of the water in the alcohol. The heat of fusion of any ice above 8.3 g is supplied by a decrease in the solution temperature. Since the total latent heat of fusion varies linearly with ice content, and the solution specific heat is virtually constant, the final solution temperature also varies linearly with sample ice content.

42-228
Intercomparison of snow cover liquid water measurement techniques.
Boyne, H.S., et al, MP 2262, Eastern Snow Conference, 43rd, 1986, 1987, p.167-172, 8 refs.
Fisk, D.J.
Snow water content, Snow cover, Unfrozen water content, Temperature measurement, Meltwater, Tests.
The amount and distribution of liquid water is important for assessing the mechanical strength, meltwater generation and meltwater transmission in snow cover. It also has a profound effect on the performance of active and passive remote sensing systems operating the microwave and millimeter wave region of the electromagnetic spectrum. Recently, an alcohol calorimeter method of measuring liquid water has been reported which is simpler than the freezing calorimeter. It is of interest to intercompare the two methods to show equivalence and to assess the errors of each. The intercomparison was made in a laboratory cold room with homogeneous snow having a mass liquid water content from 0% to 15%. The intercomparison shows that the two methods are equivalent and that the experimental errors associated with the measurements are consistant with what is expected from an error analysis of each method.

42-229
Patterns of net radiation over urban snowpacks.
Xu, F., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.173-184, 18 refs.
Buttle, J.M.
Runoff forecasting, Snowmelt, Solar radiation, Heat balance, Snow accumulation, Snow hydrology, Cloud cover, Snow surface, Snow water equivalent.

42-230
Snowpack dry deposition of sulfur: a four-day chronicle.
DeWalle, D.R., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.185-189, 5 refs.
Halverson, H.G., Sharpe, W.E.
Snow impurities, Chemical analysis, Mass balance, Blowing snow, Wind factors, Snow water equivalent.

42-231
Preliminary results of a study on snow and ground thermal regimes in the Schefferville area, northern Quebec.
Desrochers, D.T., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.190-197, 7 refs.
Granberg, H.B.
Snow thermal properties, Soil temperature, Tundra, Forest land, Geothermy, Thermal regime, Snow depth, Temperature distribution, Time factor.

42-232
Variations in net radiation over snow at a boreal forest edge.
Nadeau, C.A., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.198-203, 2 refs.
Granberg, H.B.
Snow cover distribution, Solar radiation, Forest canopy, Albedo, Thermal radiation, Radiometers.

42-233
Investigation of woodland snow thermal regime in the Schefferville area, northern Quebec.
Desrochers, D.T., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.204-211, 12 refs.
Granberg, H.B.
Snow thermal properties, Snow depth, Forest canopy, Snow temperature, Thermal regime, Temperature measurement, Seasonal variations, Snowmelt.

42-234
Spectral measurements of solar radiation in snow.
Kulkarni, A.V., et al, Eastern Snow Conference, 43rd, 1986, 1987, p.212-216, 6 refs.
Granberg, H.B.
Snow optics, Solar radiation, Spectra, Attenuation, Radiometers, Computer applications, Snow cover.

42-235
Comparison of winter cover components for a subarctic lake and peatlands.
Kingsbury, C.M., Eastern Snow Conference, 43rd, 1986, 1987, p.217-221, 11 refs.
Lake ice, Peat, Snow cover, Hoarfrost, Ice cover, Winter, Snow ice interface.

42-236
Relationships between glacier terminus melt processes and climatic conditions, Boundary Glacier, Alberta.
Sloan, V.F., Eastern Snow Conference, 43rd, 1986, 1987, p.222-227, 7 refs.
Glacier melting, Climatic factors, Glacier oscillation, Glacier ablation, Canada—Alberta—Boundary Glacier.

42-237
Spatial distributions of meltwater in an ice covered lake.
Allan, C., Eastern Snow Conference, 43rd, 1986, 1987, p.228-232, 11 refs.
Meltwater, Icebound lakes, Snowmelt, Runofff, Lake ice, Lake water, Luminescence.

42-238
Illustrations of effects of ice in the distribution of major ions ins lakes.
Adams, P., Eastern Snow Conference, 43rd, 1986, 1987, p.233-236, 12 refs.
Lake water, Lake ice, Ions, Ice formation, Water chemistry, Ice composition, Snow cover, Limnology.

42-239
Twenty-third Soviet Antarctic Expedition. Seasonal studies, 1977-1978. [Dvadtsat' tret'ia sovetskaia antarkticheskaia ekspeditsiia. Sezonnye issledovaniia 1977/78 gg],
Sovetskaia antarkticheskaia ekspeditsiia, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.80, 171p., In Russian. Refs. passim. For individual papers see 42-240 through 42-243 or A-36235, B-36236, F-36229, F-36231 through F-36233, I-36234 and J-36230.
Serdiukov, V.I., ed, Botnikov, V.N., ed.
Polar regions, Research projects, Expeditions.
This report on the 1977-1978 Soviet Antarctic Expedition provides, in Pt.1, three chapters which describe the main activities, including the organization and the scientific observations, of the expedition. Pt.2 consists of 8 individual papers giving the scientific results of various projects.

42-240
Ice conditions during the voyage of *Mikhail Somov* in the Ballesny ice massif area. [Ledovye usloviia plavaniia NES *Mikhail Somov* v Ballenskom ledianom massive],
Botnikov, V.N., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.80, p.115-121, In Russian.
Sea ice distribution, Ice edge, Ice navigation, Polar regions, Antarctica—Leningradskaya Station.
Ice conditions found along the route of the ship *Mikhail Somov* in Feb.-Mar. 1978 are described. A chart showing the massif

ice edge on Feb. 10 is discussed; the ice distribution on the eastern side of the massif made navigation very unfavorable on that date. Ice conditions in the years preceding 1978 are considered and, based on that analysis, a recommendation is made concerning the most suitable time for the arrival and unloading of ships at Leningradskaya Station, which is between Feb. 15 and Mar. 15.

42-241
Navigability of the *Amguema* type ships in the Antarctic during 1977-1978. [Nekotoryye osobennosti plavaniia sudna tipa d/e *Amguema* v l'dakh Antarktiki v 1977/78 g].
Volnov, G.N., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.80, p.130-132, In Russian. 1 ref.
Kuznetsov, I.M.
Ice navigation, Ice conditions, Sea ice.
The navigation speed of ships of different types, in different ice conditions, is discussed. A review of the data collected on the ship *Kapitan Kondrat'ev* is presented, which shows that the ship covered (in summer 1977-1978) 2370 miles in 299 hrs., at an average speed of 7.92 knots. The ship's average speed, mileage, and navigation time in waters with an increasing degree of ice concentration, at 4 different levels, are shown in a table.

42-242
Ice conditions in Weddell Sea in the spring and summer of 1977-1978. [Ledovye usloviia v more Ueddella v vesenne-letnii period 1977/78 g].
Kuznetsov, I.M., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.80, p.133-138, In Russian.
Volnov, G.N.
Ice conditions, Ice navigation, Ice edge, Sea ice distribution, Polynyas, Antarctica—Weddell Sea.
Mild ice conditions in the spring and summer of 1977-1978, recorded by the ISZ *Meteor* and the *Kapitan Kondrat'ev* navigating in the Weddell Sea, are discussed. An illustration shows the maximal northern position of ice, measured in Aug., at 50-57S, with the ice edge between 56 and 60E. Ice conditions between Jan. 8 and Feb. 28, 1978, are also illustrated. The mild conditions, which allowed navigation in the Weddell Sea even during the month of Mar. are attributed to the blowing of katabatic winds during ice formation and creating polynyas all along the coast.

42-243
Unloading operations at Druzhnaya Base in 1977-1978. [Usloviia vygruzki v rajone bazy Druzhnoi v 1977/78 g].
Kuznetsov, I.M., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1986, No.80, p.139-142, In Russian.
Volnov, G.N.
Unloading, Ice conditions, Ice navigation, Antarctica—Weddell Sea.
Ice conditions at Druzhnaya Base on Jan. 7-8 and Feb. 25, 1978 are described and illustrated. It is concluded, from data collected by helicopter and ship, that sea operations in the Druzhnaya Base area in 1978 were significantly reduced during the ice formation period. However, navigation in the Weddell Sea was not so impaired.

42-244
Adjustable navigation systems. [Korrektiruemye navigatsionnye sistemy].
Koshliakov, V.N., ed, Kiev, Institut matematiki AN USSR, 1986, 116p., In Russian. For selected papers see 42-245 and 42-246.
Ice navigation, Icebreakers, Ice breaking, Nautical instruments, Gyrocompass.

42-245
Deviations of a single-rotor, adjustable gyrocompass with two horizon-indicating devices, during forcing of ice. [O deviatsiiakh odnorotornogo korrektiruemogo girokompasa s dvumia indikatorami gorizonta v rezhime forsirovaniia l'dov].
Vasilenko, V.P., Korrektiruemye navigatsionnye sistemy (Adjustable navigation systems) edited by V.N. Koshliakov, Kiev, Institut matematiki AN USSR, 1986, p.13-18, In Russian. 3 refs.
Ice navigation, Icebreakers, Ice breaking, Nautical instruments, Gyrocompass.

42-246
Deviations of a single-rotor, adjustable gyrocompass with one horizon-indicating device, during forcing of ice. [O deviatsiiakh odnorotornogo korrektiruemogo girokompasa s odnim indikatorom gorizonta v rezhime forsirovaniia l'dov],
Polishchuk, A.N., Korrektiruemye navigatsionnye sistemy (Adjustable navigation systems) edited by V.N. Koshliakov, Kiev, Institut matematiki AN USSR, 1986, p.74-85, In Russian. 3 refs.
Icebreakers, Ice navigation, Ice breaking, Nautical instruments, Gyrocompass.

42-247
Geomagnetic investigations in eastern USSR. [Geomagnitnye issledovaniia na vostoke SSSR],
Kravchinskii, A.IA., ed, Magadan, 1986, 164p., In Russian. For selected paper see 42-248. 2 refs.
Lin'kova, T.I., ed.
Geocryology, Sediments, Frost penetration, Freeze thaw cycles, Magnetic surveys, Magnetic properties.

42-248
Influence of cryogenic processes on magnetization of deposits. [Vliianie merzlotnykh protsessov na namagnichennost' otlozhenii],
Miniuk, P.S., Geomagnitnye issledovaniia na vostoke SSSR (Geomagnetic investigations in eastern USSR) edited by A.IA. Kravchinskii and T.I. Lin'kova, Magadan, 1986, p.21-31, In Russian. 2 refs.
Sediments, Lacustrine deposits, Sands, Soil water, Frost penetration, Freeze thaw cycles, Ice volume, Hydrothermal processes, Magnetic properties.

42-249
Relation between the degree of overcooling and peculiarities of water structure. [Sviaz' temperatury pereokhlazhdeniia s osobennostiami struktury vody],
Maliarenko, V.V., et al, *Akademiia nauk SSSR. Doklady*, 1987, 294(3), p.637-639, In Russian.
Kul'akii, L.A.
Supercooling, Water temperature, Water structure, Molecular structure, Phase transformations, Thermodynamics.

42-250
Dynamics of free boundary fluids. [Dinamika zhidkosti so svobodnymi granitsami],
Monakhov, V.N., ed, *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoi sredy*, 1986, Vol.76, 171p., In Russian. For selected papers see 42-251 through 42-253.
Stefan problem, Heat transfer.

42-251
Existence of a classical solution of multivariate one-phase Stefan problem for arbitrary time intervals. [Sushchestvovanie klassicheskogo resheniia mnogomernoi odnofaznoi zadachi Stefana na proizvol'nom promezhutke vremeni],
Anisiutin, B.M., *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoi sredy*, 1986, Vol.76, p.3-18, In Russian. 11 refs.
Stefan problem, Heat transfer, Free boundary problems.

42-252
Self-modeling solution of the crystallization of a binary alloy. [Avtomodel'noe reshenie zadachi o kristallizatsii binarnogo splava],
Geta, I.G., *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoi sredy*, 1986, Vol.76, p.74-89, In Russian. 1 ref.
Solutions, Phase transformations, Stefan problem, Metals.

42-253
Stefan problem for a system of equations of viscous heat conducting gas. [Zadacha Stefana dlia sistemy uravnenii viazkogo teploprovodnogo gaza],
Kulagina, N.A., *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Dinamika sploshnoi sredy*, 1986, Vol.76, p.101-110, In Russian. 2 refs.
Stefan problem, Gases, Heat transfer.

42-254
Meteorological observations aboard R/V *Prof. W. Besnard* during the 1st and 2nd Brazilian antarctic expeditions.
Junqueira Villela, R., et al, *Academia Brasileira de Ciencias. Anais*, 1986, 58(1-Suppl.), p.205-218, 8 refs.
Festa, M.
Snow, Icebergs, Clouds (meteorology).
Results of surface meteorological observations made aboard R/V *Prof. W. Besnard* during the 1st and 2nd Brazilian antarctic expeditions are reported. The extreme and mean values, and frequencies of several elements observed south of 60 S are presented and discussed. More adverse conditions, such as strong winds, snow, rain and fog, were observed in the first phase of the 1st expedition (Jan. 8 to 19, 1983) and in the second phase of the 2nd expedition (Feb. 19 to 25, 1984). Fewer icebergs were seen in the 2nd expedition than in the 1st. The cold, low-level inertial jet stream around the northeastern extremity of the Antarctic Peninsula, originating in the Weddell Sea appeared to be related to some of the colder temperatures observed from the ship. (Auth. mod.)

42-255
Solar heating and its influence on mixing in ice-covered lakes.
Matthews, P.C., et al, *Freshwater biology*, Aug. 1987, 18(1), p.135-149, 33 refs.
Heaney, S.I.
Icebound lakes, Ice cover effect, Transmissivity, Temperature distribution.

42-256
Behaviour of oil in freezing situations.
Wilson, D.G., et al, *Spill technology newsletter*, Sep. 1986, 11(3), p.87-100, 6 refs.
Mackay, D.
Oil spills, Ice formation, Impurities.

42-257
Further studies of helicopter rotor ice accretion and protection.
Gent, R.W., et al, *Vertica*, 1987, 11(3), p.473-492, 17 refs.
Markiewicz, R.H., Cansdale, J.T.
Aircraft icing, Helicopters, Propellers.

42-258
Surface waves of large amplitude beneath an elastic sheet. Pt. 1. High-order series solution.
Forbes, L.K., *Journal of fluid mechanics*, Aug. 1986, Vol.169, p.409-428, 20 refs.
Floating ice, Drift, Water waves.

42-259
Waves due to a steadily moving source on a floating ice plate. Pt. 2.
Schulkes, R.M.S.M., et al, *Journal of fluid mechanics*, July 1987, Vol.180, p.297-318, 14 refs.
Hosking, R.J., Sneyd, A.D.
Floating ice, Drift, Water waves.

42-260
Multiwave seismic exploration. [Mnogovolnovye seismicheskie issledovaniia],
Puzyrev, N.N., ed, Novosibirsk, Nauka, 1987, 214p., In Russian. For selected paper see 42-261. 7 refs.
Seismic surveys, Swamps, Continuous permafrost, Sporadic permafrost, Wave propagation, Seismic velocity.

42-261
Experience in using multiwave seismic exploration methods in the Shirotnoe Priob'e. [Opyt ispol'zovaniia mnogovolnovoi seismorazvedki v Shirotnom Priob'e],
Vedernikov, G.V., et al, Mnogovolnovye seismicheskie issledovaniia (Multiwave seismic exploration) edited by N.N. Puzyrev, Novosibirsk, Nauka, 1987, p.154-158, In Russian. 7 refs.
Seismic surveys, Swamps, Continuous permafrost, Sporadic permafrost.

42-262
Combined remote-control monitoring of lakes. [Kompleksnyi distantsionnyi monitoring ozer],
Kondrat'ev, K.IA., ed, Leningrad, Nauka, 1987, 288p., In Russian. For selected papers see 42-263 and 42-264.
Aerial surveys, Remote sensing, Lake ice, Ice physics, Ice optics, Ice melting, Sea ice, Snow physics, Measuring instruments.

42-263
Spectral optical characteristics of melting ice covers on Lake Onega and the White Sea. [Spektral'nye opticheskie kharakteristiki taiushchego ledianogo pokrova (na primere Onezhskogo ozera i Belogo moria)],
Kondrat'ev, K.IA., et al, Kompleksnyi distantsionnyi monitoring ozer (Combined remote-control monitoring of lakes) edited by K.IA. Kondrat'ev, Leningrad, Nauka, 1987, p.211-217, In Russian. 15 refs.
Aerial surveys, Lake ice, Ice physics, Ice optics, Ice melting, Sea ice, Measuring instruments, Remote sensing.

42-264
Characteristics of the melting Sevan Lake ice cover, reestablished from its radiation field in the ultra-high frequency range. [Kharakteristiki taiushchego ledianogo pokrova vosstanovlennye po ego poliu izlucheniia v SVCh-diapazone (na primere oz. Sevan)],
Kondrat'ev, K.IA., et al, Kompleksnyi distantsionnyi monitoring ozer (Combined remote-control monitoring of lakes) edited by K.IA. Kondrat'ev, Leningrad, Nauka, 1987, p.217-224, In Russian. 9 refs.
Vlasov, V.P., Melent'ev, V.V.
Lake ice, Ice physics, Ice melting, Ice dating, Ice cover thickness, Aerial surveys, Microwaves, Infrared radiation, Unfrozen water content, Pack ice, Snow cover distribution.

42-265
Biochemistry of humus and nitrogen in soils of the Kola Peninsula. [Biokhimiia gumusa i azota pochv Kol'skogo poluostrova].
Pereverzev, V.N., Leningrad, Nauka, 1987, 304p., In Russian with abridged English table of contents enclosed. Refs. p.284-301.
Cryogenic soils, Organic soils, Peat, Soil composition, Soil chemistry, Nutrient cycle, Tundra, Forest tundra, Taiga, Alpine landscapes.

42-266
INQUA Till Symposium, Finland 1985.
INQUA Till Symposium, Oulu, Finland, Aug. 24-25, 1985, *Finland. Geological Survey. Special paper,* 1987, No.3, 194p., Refs. pas s. For selected papers see 42-267 through 42-2[illegible].
Kujansuu, R., ed, Saarnisto., M., ed.
Glacial deposits, Moraines, Glacier flow, Sediments, Landforms, Meetings, Finland.

42-267
Remodelling and reworking as causes of error in distinguishing between glacial and non-glacial deposits and landforms.
Carraro, F., *Finland. Geological Survey. Special paper,* 1987, No.3, INQUA Till Symposium, Finland 1985, edited by R. Kujansuu and M. Saarnisto, p.39-48, 14 refs.
Glacial deposits, Landforms, Origin, Accuracy, Quaternary deposits, Mountains, Italy—Alps.

42-268
Application of radar, electrical resistivity, and seismic soundings in the study of morainic landforms in northern Finland.
Sutinen, R., *Finland. Geological Survey. Special paper,* 1987, No.3, INQUA Till Symposium, Finland 1985, edited by R. Kujansuu and M. Saarnisto, p.65-75, 19 refs.
Moraines, Quaternary deposits, Glacial deposits, Landforms, Radar echoes, Electrical resistivity, Seismic refraction, Magnetic surveys, Sediments, Ice mechanics, Finland.

42-269
Micromorphology of glacial sediments as a tool in distinguishing genetic varieties of till.
Van der Meer, J.J.M., *Finland. Geological Survey. Special paper,* 1987, No.3, INQUA Till Symposium, Finland 1985, edited by R. Kujansuu and M. Saarnisto, p.77-89, 28 refs.
Glacial deposits, Microstructure, Origin, Quaternary deposits, Sediments.

42-270
Laurentide Ice Sheet and long-distance transport.
Prest, V.K., et al, *Finland. Geological Survey. Special paper,* 1987, No.3, INQUA Till Symposium, Finland 1985, edited by R. Kujansuu and M. Saarnisto, p.91-101, 33 refs.
Nielsen, E.
Glacial geology, Ice sheets, Ice mechanics, Pleistocene, Glacial flow, Paleoclimatology, Glaciation, Canada.

42-271
Debris transport mechanisms at active alpine glacier margins: Alaskan case studies.
Evenson, E.B., et al, *Finland. Geological Survey. Special paper,* 1987, No.3, INQUA Till Symposium, Finland 1985, edited by R. Kujansuu and M. Saarnisto, p.111-136, 22 refs.
Clinch, J.M.
Glacial deposits, Sediment transport, Moraines, Ice edge, Ice rafting, United States—Alaska—Maclaren Glacier.

42-272
Influence of ice discharge of alpine valley glaciers.
Husen, D. van, *Finland. Geological Survey. Special paper,* 1987, No.3, INQUA Till Symposium, Finland 1985, edited by R. Kujansuu and M. Saarnisto, p.137-142, 8 refs.
Glacier flow, Glaciation, Glacial hydrology, Drainage, Mountains, Paleoclimatology.

42-273
Assessment of acoustical technology for seabed geophysical investigations in Arctic regions of permanent sea ice cover.
Lewis, J.F., EOR project No.87-01, Dartmouth, Nova Scotia, Earth and Ocean Research Ltd., May 22, 1987, 154p. + appends., Refs. p.151-154.
Sea ice distribution, Ice physics, Ice acoustics, Ice morphology, Geophysical surveys, Models, Ice cover thickness, Acoustic measurement.

42-274
Pavement icing detector—final report.
Goldstein, N., et al, MP 2263, Contract No.DACA33-86-G-0014, Burlington, MA, Spectral Sciences, Inc., Jan. 1987, 26p. + append., Prepared for USA CRREL. 8 refs.
Richtameier, S.C.
Road icing, Pavements, Ice detection, Ice formation, Measuring instruments, Design, Safety, Experimentation, Noise (sound).

42-275
Progress report on Bertelsen Research and Development of an air cushion crawler all-terrain vehicle.
Bertelsen, W.R., *Canadian aeronautics and space journal,* June 1987, 33(2), p.71-75, 8 refs.
All terrain vehicles, Air cushion vehicles, Velocity.

42-276
Ice crystal production by mountain surfaces.
Rogers, D.C., et al, *Journal of climate and applied meteorology,* Sep. 1987, 26(9), p.1152-1168, 45 refs.
Vali, G.
Ice crystals, Supercooled clouds, Mountains, United States—Wyoming—Elk Mountain.

42-277
Possible application of bacterial condensation freezing to artificial rainfall enhancement.
Levin, Z., et al, *Journal of climatology and applied meteorology,* Sep. 1987, 26(9), p.1188-1197, 20 refs.
Yankofsky, S.A., Pardes, D., Magal, N.
Organic nuclei, Condensation nuclei, Ice nuclei, Bacteria, Artificial precipitation.

42-278
Satellite-derived maps of snow cover frequency for the Northern Hemisphere.
Dewey, K.F., *Journal of climatology and applied meteorology,* Sep. 1987, 26(9), p.1210-1229, 22 refs.
Snow cover distribution, Mapping, Spaceborne photography.

42-279
Airphoto interpretation and the Canadian landscape.
Mollard, J.D., et al, [Ottawa], Canada, Dept. of Energy, Mines and Resources, 1983, 415p.
Janes, J.R.
Landscape types, Photointerpretation, Glaciers, Permafrost, Moraines, Maps, Aerial surveys, Topographic features, Drainage, Remote sensing, Canada.

42-280
Evaluation of the stability of gas hydrates in northern Alaska.
Kamath, A., et al, *Cold regions science and technology,* Aug. 1987, 14(2), p.107-119, 39 refs.
Godbole, S.P., Ostermann, R.D., Collett, T.S.
Permafrost thermal properties, Hydrates, Geothermy, Surface temperature, Permafrost depth, Pressure, Chemical analysis, Natural gas, Accuracy.

42-281
Pressure and temperature effects in Röthlisberger channels.
Shoemaker, E.M., *Cold regions science and technology,* Aug. 1987, 14(2), p.121-127, 14 refs.
Subglacial drainage, Melting points, Channels (waterways), Pressure, Temperature effects, Ice melting, Models, Analysis (mathematics).

42-282
Influence of heat extraction rate in freezing soils.
Konrad, J.M., *Cold regions science and technology,* Aug. 1987, 14(2), p.129-137, 12 refs.
Soil freezing, Frost heave, Heat transfer, Heat recovery, Soil water, Water content, Tests.

42-283
Fracture toughness of some wood-ice composites.
Nixon, W.A., et al, *Cold regions science and technology,* Aug. 1987, 14(2), p.139-145, 10 refs.
Smith, R.A.
Ice composition, Wood, Ice cracks, Ice strength, Ice solid interface, Fracturing, Tests.

42-284
Effect of cooling rate on freezing of a saturated soil.
Horiguchi, K., *Cold regions science and technology,* Aug. 1987, 14(2), p.147-153, 11 refs.
Soil freezing, Cooling rate, Heat transfer, Saturation, Analysis (mathematics), Frozen ground physics, Ground ice.

42-285
Very conductive layer below the permafrost of Seymour and Robertson Islands in the eastern Antarctic Peninsula.
Fournier, H.G., et al, *Cold regions science and technology,* Aug. 1987, 14(2), p.155-161, 25 refs.
Corte, A.E., Gasco, J.C., Moyano, C.E.
Permafrost physics, Permafrost depth, Magnetic resonance, Electrical resistivity, Sounding, Electromagnetic prospecting, Permafrost thickness, Measuring instruments, Antarctica—Antarctic Peninsula.
The interpretation of magnetotelluric (M-T) sounding curves over Seymour and Robertson islands in the Antarctic Peninsula implies a very conductive layer below the permafrost. The curves are analyzed above the period of 0.1 s. and account is taken of the resistive permafrost layer. This very conductive layer is here composed of 16 m at 0.6 ohm-m and 17.5 m at 0.3 ohm-m, respectively. (Auth.)

42-286
Salinity and growth rate of ice formed by sea spray.
Makkonen, L., *Cold regions science and technology,* Aug. 1987, 14(2), p.163-171, 30 refs.
Ice growth, Sea spray, Ice salinity, Offshore structures, Ice water interface, Models, Icing, Dendritic ice.

42-287
Subsea permafrost in Norton Sound, Alaska.
Osterkamp, T.E., et al, *Cold regions science and technology,* Aug. 1987, 14(2), p.173-180, 18 refs.
Harrison, W.D., Hopkins, D.M.
Subsea permafrost, Permafrost thermal properties, Permafrost distribution, Ocean bottom, Soil temperature, Geothermy, Ground thawing, United States—Alaska—Norton Sound.

42-288
Exothermic cutting of frozen materials.
Garfield, D.E., et al, *Cold regions science and technology,* Aug. 1987, 14(2), MP 2264, p.181-183, 2 refs.
Haynes, F.D.
Ice cutting, Ground thawing, Ice melting, Gravel, Frozen ground, Sands, Equipment, Heat sources.
A commercially available cutting torch which uses consumable steel cutting rods was evaluated for cutting ice, and frozen sand, gravel, and silt. This relatively simple, lightweight torch was envisioned to have potential applications for producing shallow small-diameter holes in frozen ground for anchors, grounding rods, guy wire stakes, etc. Specific energies for cutting the frozen materials compared reasonably well with other thermal processes, but as expected, were much higher (i.e. less efficient) than mechanical cutting processes. Major advantages of the torch include portability, short set-up time, and its ability to melt a variety of materials.

42-289
Simple-shear box experiments with floating ice rubble.
Urroz, G.E., et al, *Cold regions science and technology,* Aug. 1987, 14(2), p.185-199, 10 refs.
Ettema, R.
Floating ice, Shear strength, Ice strength, Experimentation, Ice porosity, Stresses, Shear rate.

42-290
Thermally driven changes in the optical properties of sea ice.
Buckley, R.G., et al, *Cold regions science and technology,* Aug. 1987, 14(2), p.201-204, 8 refs.
Trodahl, H.J.
Sea ice, Ice optics, Ice temperature, Ice composition, Ice salinity, Backscattering, Thermal effects, Impurities, Light scattering, Air temperature, Antarctica—McMurdo Sound.
Optical backscattering measurements on first year sea ice in McMurdo Sound have revealed dramatic changes in optical behavior occurring following an air temperature rise from -15 C to -5 C. Ice temperature and salinity profiles, measured during the optical experiments, have identified the source of the change as a rapid drainage of surface brine. (Auth.)

42-291
Light transmission in sea ice.
Trodahl, H.J., et al, *New Zealand antarctic record,* 1987, 7(3), p.20-22, 1 ref.
Buckley, R.G.
Sea ice, Ice optics, Antarctica—McMurdo Sound.
The scattering and absorption of sunlight falling on the sea ice cover, which every winter doubles the effective area of the antarctic continent, exerts a strong influence over the weather of the Southern Hemisphere and controls the growth of microbial communities in the water column and within the ice itself. To develop an understanding of the interaction of light with sea ice, a program was begun to perform *in situ* measurements of the diffusive transport of light in first year sea ice on McMurdo Sound. The past two seasons have seen the completion of the first phase of this study. Knowledge gained from these first phase measurements is briefly outlined. (Auth.)

42-292
On the flooding of Vanda Station.
Chinn, T.J.H., et al, *New Zealand antarctic record,* 1987, 7(3), p.23-31, 10 refs.
McSaveney, M.J.
Lake water, Ablation, River flow, Antarctica—Onyx River, Antarctica—Vanda, Lake.
During the 18-year period 1969-1987, Lake Vanda has risen in two steps separated by a 10-year interval of equilibrium from 1971 to 1981. As the lake rises, its area increases, and the volume lost to ablation also increases. A mean ablation loss of 0.305 m/a has been calculated from a 10-year period when ablation balanced inflow from the Onyx River. Vanda Station now is only 4.42 m above lake level and flooding appears inevitable. The period of time left before the Station is flooded may be predicted from predictions of lake rises, mean annual ablation loss and the area of the lake. Linear extrapolations of the rises over the past 18 and 10 years, (which take no account of the accelerating increase in rises) suggest that the Station will be flooded in 16 and 18 years, respectively. However, an extrapolation of the accelerating increase over the past 10 years suggests a 23% probability that the Station will be flooded in 2.5 years, during the 1989-90 summer season. The cause of the rise is the only significant inflow into Lake Vanda, the glacier meltwater fed Onyx River, whose annual discharge has systematically increased by nearly an order of magnitude over the last 10 years. (Auth.)

42-293
Hydrogeological and engineering-geological problems of Central Asia. [Gidrogeologicheskie i inzhenerno-geologicheskie problemy Srednei Azii],
Mavlianov, G.A., ed, Tashkent, FAN, 1985, 132p., In Russian. For selected papers see 42-294 and 42-295. Refs. passim.
Mudflows, Ground ice, Ice lenses, Classifications, Slope processes, Periglacial processes, Meltwater, Glacial hydrology, Glacial erosion, Glacial deposits, Moraines, Composition, Mechanical properties.

42-294
Changes in mudflow activity under conditions of recent glacier regression. [Izmenenie selevoĭ aktivnosti v usloviiakh sovremennoĭ regressii oledeneniia],
Abdullaev, Sh.Kh., et al, Gidrogeologicheskie i inzhenerno-geologicheskie problemy Srednei Azii (Hydrogeological and engineering-geological problems of Central Asia) edited by G.A. Mavlianov, Tashkent, FAN, 1985, p.105-108, In Russian.
Kostenko, N.P., Selnova, I.B.
Mudflows, Ground ice, Periglacial processes, Meltwater, Ice lenses, Glacial hydrology, Glacial erosion, Classifications, Glacial deposits, Composition, Snow cover effect, Mechanical properties.

42-295
Recent problems of engineering-geological investigations and mudflow classifications from the viewpoint of O.K. Lange. [Sovremennye voprosy inzhenerno-geologicheskikh issledovaniĭ i klassifikatsii selei v aspekte idei O.K. Lange],
Pushkarenko, V.P., Gidrogeologicheskie i inzhenerno-geologicheskie problemy Srednei Azii (Hydrogeological and engineering-geological problems of Central Asia) edited by G.A. Mavlianov, Tashkent, FAN, 1985, p.108-114, In Russian. 7 refs.
Mudflows, Glacial hydrology, Classifications, Slope processes, Engineering geology.

42-296
Biological resources of the Arctic and the Antarctic. [Biologicheskie resursy Arktiki i Antarktiki],
Skarlato, O.A., ed, Moscow, Nauka, 1987, 447p., In Russian. For individual papers see 42-297 and 42-298, or B-36275 through B-36284. Refs. passim.
Alekseev, A.P., ed, Liubimova, T.G., ed.
Polar regions, Shores, Climatic changes, Ice conditions, Sea ice distribution, Land ice, Ice surface, Albedo, Biogeography, Ecology, Biomass, Coastal topographic features, Ocean currents, Arctic Ocean.
On the basis of the last several years' research conducted by members of various Soviet institutes, this book presents a compendium of articles dealing with the biology and related meteorology and oceanography of the Arctic and Antarctic. The review-type articles contain a wealth of references to both Soviet and non-Soviet literature.

42-297
Climatic fluctuations in the North-European Basin. [Kolebaniia klimata Severo-Evropeĭskogo basseĭna],
Dement'ev, A.A., et al, Biologicheskie resursy Arktiki i Antarktiki (Biological resources of the Arctic and the Antarctic) edited by O.A. Skarlato, A.P. Alekseev and T.G. Liubimova, Moscow, Nauka, 1987, p.9-15, In Russian. 6 refs.
Orlov, N.F.
Polar regions, Shores, Climatic changes, Ice conditions, Sea ice distribution, Land ice, Ice surface, Albedo, Biogeography, Ecology, Biomass, Arctic Ocean.

42-298
Hydrologic and ice conditions in the shelf zone of Arctic seas. [Gidrologicheskie i ledovye usloviia shel'fovoĭ zony arkticheskikh moreĭ],
Baskakov, G.A., et al, Biologicheskie resursy Arktiki i Antarktiki (Biological resources of the Arctic and the Antarctic) edited by O.A. Skarlato, A.P. Alekseev and T.G. Liubimova, Moscow, Nauka, 1987, p.15-48, In Russian. 25 refs.
Ice shelves, Ice cover strength, Shores, Ice formation, Land ice, Ice deterioration, Ice accretion, Sea ice distribution, Coastal topographic features, Ocean currents, Drift, Bottom ice, Bottom topography, Ice cover thickness, Ice structure.

42-299
Detection and classification of ice.
Lewis, E.O., et al, Letchworth, England, Research Studies Press Ltd., 1987, 325p., Refs. p.291-303.
Currie, B.W., Haykin, S.
DLC GB.L48 1987
Ice detection, Ice navigation, Ice physics, Classifications, Radar, Meteorological data, Glacier ice, Backscattering, Equipment, Design.

42-300
Physical basis of ice sheet modelling.
Waddington, E.D., ed, *International Association of Hydrological Sciences. Publication,* 1987, No.170, 384p., Proceedings of an international symposium held during the 19th General Assembly of the International Union of Geodesy and Geophysics at Vancouver, B.C., Canada, 9-22 Aug. 1987. Refs. passim. For selected papers see 42-301 through 42-332.
Walder, J.S., ed.
Ice sheets, Ice models, Ice physics, Meetings, Mass transfer, Heat transfer, Climatic factors, Rheology, Subglacial drainage, Paleoclimatology.

42-301
Ice sheet models—an overview.
Meier, M.F., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.1-4, 6 refs., With French summary.
Ice sheets, Ice models, Ice mechanics, Rheology, Ice physics, Environments, Thermodynamics, Boundary value problems.

42-302
Is the creep of ice really independent of the third deviatoric stress invariant.
Baker, R.W., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.7-16, 21 refs., With French summary.
Ice creep, Shear stress, Ice deformation, Compressive properties, Rheology, Analysis (mathematics), Strains.

42-303
Crystalline fabric of polar ice sheets inferred from seismic anisotropy.
Blankenship, D.D., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.17-28, 25 refs., With French summary.
Bentley, C.R.
Ice mechanics, Ice crystal structure, Ice sheets, Ice temperature, Seismic surveys, Ice models, Ice cores, Analysis (mathematics), Antarctica—Dome C.
In the future, an important parameter for modelling the dynamics of polar ice sheets will be the crystalline fabric of the constituent ice mass. Compressional (P) waves reflected at wide angles from the base of an ice sheet can be used to obtain a good approximation of both the mean fabric and mean temperature of that ice sheet. Seismic observations made in the vicinity of Dome C in East Antarctica show that the ice sheet there is transversely isotropic with a vertical axis of symmetry. Assuming the crystals' c-axes are distributed evenly within a vertical cone of apex angle I, the limiting fabric structures at Dome C are (a) half isotropic ice and half anisotropic ice with $I=0$ deg, and (b) all anisotropic ice with $I=29$ deg. On the basis of c-axis distributions measured in ice cores from other locations, the most reasonable structure at Dome C is one containing one-third isotropic ice and two-thirds anisotropic ice with $I=20$ deg (corresponding to a total thickness of 3414 m). The seismically estimated mean temperature of the ice sheet (below the firn) is -38 C. (Auth.)

42-304
Constitutive properties of ice at Dye 3, Greenland.
Dahl-Jensen, D., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.31-43, 31 refs., With French summary.
Gundestrup, N.S.
Ice sheets, Ice mechanics, Ice creep, Shear strain, Rheology, Boreholes, Paleoclimatology, Ice deformation, Flow rate.

42-305
Enhanced flow of Wisconsin ice related to solid conductivity through strain history and recrystallization.
Fisher, D.A., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.43-51, 12 refs., With French summary.
Ice mechanics, Recrystallization, Ice creep, Strains, Impurities, Ice cores, Boreholes, Volcanoes, Rheology, Oxygen isotopes, Paleoclimatology.

42-306
Mechanical behavior of anisotropic polar ice.
Pimienta, P., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.57-66, 28 refs., With French summary.
Duval, P., Lipenkov, V.IA.
Ice mechanics, Rheology, Viscosity, Ice sheets, Ice creep, Compressive properties, Tests, Flow rate, Antarctica—Vostok Station.
Uniaxial and biaxial compression tests on ice samples of the Vostok ice core (Antarctica) were carried out in order to study the flow behavior of anisotropic ice with c-axes in a vertical plane. Values of the rheological parameters involved in power law creep are given. It is deduced that the viscosity of Vostok ice for the thinning of annual layers is very high. The results are compared with those obtained with ices with a single maximum fabric. Borehole tilting measurements were analyzed by taking into account the anisotropic power law creep. The possibility of a linear viscosity at low stresses is also considered. Regardless of the value of the exponent of the flow law, dislocation glide appears to be at the origin of the typical fabrics of polar ice. (Auth.)

42-307
Flow velocity profiles and accumulation rates from mechanical tests on ice core samples.
Shoji, H., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.67-77, 15 refs., With French summary.
Langway, C.C., Jr.
Glacier flow, Ice mechanics, Strains, Stresses, Compressive properties, Ice cores, Velocity, Tests, Snow accumulation, Paleoclimatology.

42-308
Continuous till deformation beneath ice sheets.
Alley, R.B., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.81-91, 47 refs., With French summary.
Blankenship, D.D., Rooney, S.T., Bentley, C.R.
Glacier flow, Ice sheets, Sediments, Subglacial observations, Sediment transport, Glacial geology, Subglacial drainage, Deformation, Water pressure.
Either advance of a glacier over unconsolidated sediments or water-pressure fluctuations in unconsolidated subglacial sediments can trigger sediment deformation and changes in glacier flow and glacier-margin position without further climatic forcing. However, for a wet-based glacier beneath which bedrock erosion balances till transport by continuous subglacial deformation, internal instabilities are less likely and glacier changes that record climatic forcings are more likely. The evidence is presented here that the West Antarctic ice sheet is a modern example of such continuous till deformation, and that other ice sheets, including the Laurentide ice sheet, may have been similar. An ice sheet with continuous till deformation will leave a more regular sedimentary record than one with discontinuous deformation, so careful glacial-geological studies should allow distinction of these cases for former ice sheets. (Auth.)

42-309
Anomalous heat flow and temperatures associated with subglacial water flow.
Echelmeyer, K., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.93-104, 10 refs., With French summary.
Subglacial drainage, Water flow, Heat transfer, Sediments, Temperature effects, Sediments, Ice melting, Ice sheets, Ice temperature, Analysis (mathematics), Glacial deposits.

42-310
Coupling between water pressure and basal sliding in a linked-cavity hydraulic system.
Humphrey, N.F., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.105-119, 21 refs., With French summary.
Ice mechanics, Water flow, Glacier beds, Basal sliding, Stresses, Glacier flow, Subglacial caves, Water pressure, Velocity, Mathematical models.

42-311
Zonal arrangement of thermal regimes of Pleistocene ice sheets as indicated by field data from Poland.
Liszkowski, J., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.121-130, 16 refs., With French summary.
Ice sheets, Thermal regime, Paleoclimatology, Ice conditions, Glacier flow, Glaciation, Pleistocene, Moraines, Poland.

42-312
Sliding of cold ice sheets.
Lliboutry, L., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.131-143, 38 refs., With French summary.
Ice mechanics, Basal sliding, Ice sheets, Glacial erosion, Rheology, Glacier beds, Ice temperature, Moraines, Analysis (mathematics).

42-313
Effects of glacial erosion on the flow of ice sheets and the morphology of their beds.
Mazo, V.L., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.145-152, 19 refs., With French summary.
Glacier flow, Glacial erosion, Ice sheets, Glacier beds, Geomorphology, Ice mechanics, Mathematical models, Rheology.

42-314
Fit of ice motion models to observations from Variegated Glacier, Alaska.
Raymond, C.F., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.153-166, 40 refs., With French summary.
Harrison, W.D.
Glacier flow, Ice mechanics, Ice creep, Models, Rheology, Sliding, Shear stress, Velocity, United States—Alaska—Variegated Glacier.

42-315
Wind pumping: a potentially significant heat source in ice sheets.
Clarke, G.K.C., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.169-180, 6 refs., With French summary.
Fisher, D.A., Waddington, E.D.
Ice sheets, Air flow, Heat sources, Ice thermal properties, Atmospheric pressure, Firn, Friction, Permeability, Temperature distribution, Analysis (mathematics).

42-316
Reconstructing mass-balance profiles from climate for an Arctic ice cap.
Hanson, B., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.181-189, 16 refs., With French summary.
Glacier mass balance, Ice sheets, Temperature effects, Slope orientation, Climatic factors, Models.

42-317
Effect of crevasses on the solar heating of a glacier surface.
Pfeffer, W.T., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.191-205, 17 refs., With French summary.
Bretherton, C.S.
Glacier flow, Glacier surfaces, Solar radiation, Crevasses, Heat transfer, Mass transfer, Mathematical models.

42-318
Time dependent boundary conditions for calculation of temperature fields in ice sheets.
Ritz, C., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.207-216, 21 refs., With French summary.
Ice temperature, Ice sheets, Ice growth, Boundary value problems, Surface temperature, Ice cover thickness, Time factor, Velocity.

42-319
Geothermal heat flux beneath ice sheets.
Waddington, E.D., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.217-226, 41 refs., With French summary.
Ice sheets, Heat flux, Subglacial observations, Geothermy, Melting points, Ice temperature, Models, Mass balance, Surface temperature, Ice mechanics.

42-320
Role of large-scale ice sheets in climatic history.
Flohn, H., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.231-241, Refs. p.239-241., With French summary.
Ice sheets, Ice cover effect, Climatic changes, Atmospheric composition, Paleoclimatology, History, Ice formation, Glaciation.
The climatic history of the earth contains two periods of some 10,000,000 years length during which a continent in polar latitudes was partly or totally glaciated, while the opposite hemisphere was essentially ice-free. The present glaciation of Antarctica started about 38 Ma BP, preceding those of the northern continents by more than 30 MA. The climatogenetic role of this hemispheric asymmetry is outlined, as well as the role of variations in the composition of the atmosphere. Together with the varying land-sea distribution in polar latitudes, the latter primarily control the climatic history of the planet Earth. (Auth.)

42-321
Glacial isostasy and the Ice Age cycle.
Peltier, W.R., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.247-260, 18 refs., With French summary.
Hyde, W.T.
Glaciation, Isostasy, Ice volume, Climatic changes, Ice age theory, Pleistocene, Oxygen isotopes, Drill core analysis, Sediments.

42-322
Simple simulation of ice-atmosphere-ocean-land coupling in climatic models.
Schneider, S.H., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.261-264, 13 refs., With French summary.
Thompson, S.L., Muszynski, I.
Ice cover effect, Climatic changes, Interfaces, Ice air interface, Ice water interface, Models, Ice solid interface.

42-323
Ice sheet elevation changes from isotope profiles.
Grootes, P.M., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.269-281, 33 refs., With French summary.
Stuiver, M.
Ice cover thickness, Climatic changes, Ice sheets, Ice cores, Oxygen isotopes, Drill core analysis, Ice melting, Glacier flow, Rheology, Antarctica—Dome C.
The contributions of climate, ice sheet thinning, and ice flow to the total change in delta (delta(18)O or deltaD) observed in antarctic cores can be estimated by assuming (a) a uniform, climate-related delta change for Antarctica, based on the central East Antarctic Dome C core, and (b) different time constants for the three contributions. This approach, previously developed for the Ross Ice Shelf delta(18)O profile at J-9, is applied to the Law Dome and D-10 profiles. Evidently Law Dome was an independent dome during the last glacial period, because the surface elevation on Law Dome at which ice at the glacial-interglacial transition in core BHF originated decreased by about 530 m across the transition. Similarly about 1300 m of surface elevation lowering of the origin of ice across the glacial-interglacial transition is shown by the isotopic record in core D-10.

42-324
Derivation of paleoelevations from total air content of two deep Greenland ice cores.
Herron, S.L., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.283-295, 32 refs., With French summary.
Langway, C.C., Jr.
Ice cores, Ice cover thickness, Bubbles, Ice temperature, Paleoclimatology, Atmospheric pressure, Freeze thaw cycles, Greenland.

42-325
Use of trace constituents to test flow models for ice sheets and ice caps.
Reeh, N., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.299-310, 24 refs., With French summary.
Hammer, C.U., Thomsen, H.H., Fisher, D.A.
Ice creep, Ice sheets, Glacier flow, Impurities, Tests, Oxygen isotopes, Ice surface, Variations, Ice cores, Models.

42-326
Constraints on models in the Ross Embayment, Antarctica.
Bentley, C.R., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium ron the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.313-322, 30 refs., With French summary.
Ice sheets, Ice mechanics, Glacier flow, Rheology, Land ice, Floating ice, Glacier beds, Gravity, Mathematical models, Deformation, Viscosity, Antarctica—Ross Ice Shelf.
Numerical modelling of ice flow and evolution in the West Antarctic Ross Embayment system must treat a variety of physical characteristics that differ markedly through the system. Gravitational driving forces on the inland ice are balanced largely by the bed drag, but on the ice shelf and in the lower reaches of the ice streams, side drag appears to be dominant. The glacial system responds to applied forces in several ways. Bed deformation probably dominates under active ice streams, and may occur elsewhere under the inland ice, although to a lesser extent. Substantial uncertainties remain about the effective viscosity of a deforming subglacial layer. On the ice shelf Coulomb failure may provide a good model for differential motion across highly crevassed, boundary shear zones. Both the ice shelf and the grounded "ice plain," situated at the transition between ice stream and ice shelf, are characterized by longitudinal and/or transverse spreading. A goal of modelling should be to reproduce the strikingly transient behavior of the Ross ice streams, principally the stagnation of ice stream C some two centuries ago and the apparently rapid present-day expansion of ice stream B. (Auth.)

42-327
Force balance of Rutford Ice Stream, Antarctica.
Frolich, R.M., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium on the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.323-331, 15 refs., With French summary.
Mantripp, D.R., Vaughan, D.G., Doake, C.S.M.
Glacier flow, Ice mechanics, Shear stress, Ice sheets, Climatic changes, Ice cover thickness, Strains, Velocity, Flow rate, Ice shelves, Gravity, Antarctica—Ellsworth Mountains.
Data are presented along a 60 km survey network on Rutford Ice Stream, Antarctica. The network follows closely a streamline and is situated above the grounding line. Measurements of velocity, strain rate, surface elevation and ice thickness allow a preliminary interpretation of the flow regime. A prominent feature is a rise in the bed of 500 m, over which the ice must flow. The surface expression of this step is seen in Landsat satellite images as a surface knoll whose shape emphasizes that the flow must be considered using a full three dimensional analysis. Vertical shear stress gradients appear to be important within about 20 km of the knoll. (Auth.)

42-328
Geological evidence to constrain modelling of the Late Pleistocene Rhonegletscher (Switzerland).
Haeberli, W., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium on the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.333-346, Refs. p.343-346., With French summary.
Schlüchter, C.
Glacial geology, Geomorphology, Glacier ablation, Models, Paleoclimatology, Pleistocene, Glaciers, Switzerland.

42-329
Late Quaternary deglaciation of the Amundsen Sea: implications for ice sheet modelling.
Kellogg, T.B., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium on the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.349-357, 18 refs., With French summary.
Kellogg, D.E.
Ice sheets, Sea ice distribution, Glacier oscillation, Quaternary deposits, Paleoecology, Models, Grounded ice, Ice scoring, Ice shelves, Drill core analysis, Antarctica—Amundsen Sea.
Field observations and micropaleontological and sedimentological study of the previously unstudied Amundsen Sea continental shelf suggest the following preliminary conclusions bearing on glaciological modelling of the West Antarctic Ice Sheet: (a) the outer continental shelf is relatively shallow (360-460 m) with low relief, in contrast to the inner shelf where deep (> 500 m), possibly glacially scoured, troughs occur. Troughs may represent former ice-stream channels. (b) Pine Island Bay cores are composed of silty mud with rare ice-rafted detritus (IRD) and microfossils, suggesting former ice-shelf cover consistent with observed rapid calving-margin recession of Pine Island Glacier. (c) Elsewhere, a thin (<15 cm) sandy mud overlies compact diamicton. In the eastern margin area this upper layer may result from the establishment of the Amundsen Sea polynya <3000 years ago. (d) Grounded ice apparently advanced to the continental shelf margin, perhaps during the late Wisconsin, and grounded or shelf ice probably occupied the Amundsen Sea until recently. (Auth.)

42-330
Observations at the edge of the Greenland ice sheet: boundary condition implications for modellers.
Knight, P.G., *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium on the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.359-366, 14 refs., With French summary.
Ice structure, Ice sheets, Ice edge, Isotope analysis, Glacier flow, Strains, Glacial deposits, Subglacial observations, Basal sliding, Greenland.

42-331
Development, dynamics, and dissipation of a late Wisconsin ice mass over northern New England, USA.
Lowell, T.V., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium on the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.367-375, 11 refs., With French summary.
Calkin, P.E.
Ice sheets, Ice mechanics, Landforms, Glaciation, Glacier flow, Glacial deposits, Rheology, Paleoclimatology, Glacial geology, United States—New England.

42-332
Problems of testing ice sheet models: a British case study.
Payne, A.J., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.170, International Symposium on the Physical Basis of Ice Sheet Modelling, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by E.D. Waddington and J.S. Walder, p.377-380, 4 refs., With French summary.
Sugden, D.E.
Ice sheets, Ice models, Models, Tests.

42-333
Maintenance of reinforced concrete bridges. [Instandhaltung von Stahl- und Spannbetonbrücken],
Ruffert, G., *Strassen- und Tiefbau,* June 1987, 41(6), p.5-10, In German with English summary, p.3.
Bridges, Reinforced concretes, Winter maintenance, Chemical ice prevention, Corrosion, Mortars, Road maintenance, Pollution.

42-334
Disturbance and recovery of arctic Alaskan tundra terrain.
Walker, D.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1987, CR 87-11, 63p., ADA-184 442, Refs. p.52-62.
Cate, D., Brown, J., Racine, C.
Tundra, Revegetation, Human factors, Land reclamation, Environmental impact, Pipelines, Permafrost, Roads, United States—Alaska.
This document is a summary of over a decade of CRREL-managed research regarding disturbance and recovery in northern Alaska. Much of this research was sponsored by the U.S. Geological Survey's National Petroleum Reserve—Alaska exploration program and the Department of Energy's environmental research program, although numerous other agencies and members of the oil industry have also made contributions to several of the university participants. This work comes at a time of major transition in the focus of northern Alaskan environmental research from single-impact studies to analysis of cumulative impacts. Thus, it summarizes studies of anthropogenic disturbances in northern Alaska and discusses the immediate need for new methods to approach the problems of revegetation, restoration and cumulative impacts of terrain underlain by permafrost. This heritage of research comes from many research sites in northern Alaska, including Cape Thompson, the Seward Peninsula, Barrow, Fish Creek, Oumalik, East Oumalik, Prudhoe Bay, the Arctic National Wildlife Refuge and along the trans-Alaska pipeline. The impacts that are discussed include bladed trails, off-road vehicle trails, winter trails, ice roads, gravel pads and roads, borrow pits, roadside impoundments, road dust, hydrocarbon spills and seawater spills.

42-335
Large scale effects of seasonal snow cover.
International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987, *International Association of Hydrological Sciences. Publication,* 1987, No.166, 425p., With French summaries. Refs. passim. For individual papers see 42-336 through 42-370.
Goodison, B.E., ed, Barry, R.G., ed, Dozier, J., ed.
Snow cover effect, Snow water equivalent, Snow cover distribution, Runoff, Climatic changes, Atmospheric circulation, Snowmelt, Meetings, Snow optics.

42-336
Large-scale effects of seasonal snow cover.
Walsh, J.E., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.3-14, 18 refs., With French summary.
Snow cover effect, Atmospheric circulation, Snow cover distribution, Models, Climatic changes.

42-337
Snow cover as an indicator of climate change.
Robinson, D.A., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.15-25, 21 refs., With French summary.
Snow cover effect, Climatic changes, Snow cover distribution, Remote sensing, Snow depth.

42-338
Snow cover-atmospheric interactions.
Dewey, K.F., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.27-42, 16 refs., With French summary.
Snow air interface, Snow cover effect, Snow cover distribution, Temperature effects, Seasonal variations, Storms.

42-339
Parameterization of snow albedo for climate models.
Marshall, S.E., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.43-50, 4 refs., With French summary.
Warren, S.G.
Snow cover effect, Albedo, Atmospheric circulation, Climatic changes, Snow optics, Snow depth, Models, Grain size, Sunlight, Snow impurities.

42-340
Seasonal variation of Eurasian snow cover and its impact on the Indian summer monsoon.
Bhanu Kumar, O.S.R.U., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.51-60, 19 refs., With French summary.
Snow cover distribution, Snow cover effect, Wind (meteorology), Remote sensing, Seasonal variations, Rain.

42-341
Statistical studies of the atmospheric circulation of the Northern Hemisphere, hydroclimatic regimes in China and Antarctic ice-snow cover.
Peng, G., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.61-72, 12 refs., With French summary.
Domrös, M.
Ice cover effect, Snow cover effect, Meteorology, Runoff, Sea ice, Atmospheric circulation, Statistical analysis, Indexes (ratios), Antarctica.
On the basis of 10-year monthly and long-term annual data, the connections of different indices of the atmospheric circulation of the Northern Hemisphere and some hydroclimatic regimes in China with the Antarctic ice-snow indices are discussed, using correlation, regression, stepwise regression, power-spectral and cross-spectral analyses. The results show that there are close correlations between some meteorological conditions of the Northern Hemisphere and the Antarctic ice-snow cover, in particular, between the Northwestern Pacific subtropic high or the annual run-off of Yellow River at Sanmenxia station and the ice-snow indices. The strongest correlations often appear with some time lags of the meteorological and hydrological conditions behind the ice-snow variations. The usefulness of these connections for hydroclimatic forecasting is considered. (Auth. mod.)

42-342
Interactions between the snow cover and the atmospheric circulations in the Northern Hemisphere.
Morinaga, Y., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.73-78, 10 refs., With French summary.
Yasunari, T.
Snow cover effect, Atmospheric circulation, Snow cover distribution, Snow air interface, Remote sensing.

42-343
Temporal and spatial variations of the snow cover in the Swiss Alps.
Lang, H., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium on Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.79-92, 9 refs., With French summary.
Rohrer, M.
Snow cover distribution, Snow depth, Snow water equivalent, Climatic factors, Mountains, Time factor, Snowfall, Switzerland—Alps.

42-344
Seasonal snow resources and their fluctuations in China.
Li, P., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.93-104, 11 refs., With French summary.
Snowfall, Snow accumulation, Snow density, Snow depth, Seasonal variations, Snow cover distribution, China.

42-345
Importance and effects of seasonal snow cover.
Martinec, J., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.107-120, 28 refs., With French summary.
Snow water equivalent, Snow cover distribution, Snow depth, Snowmelt, Runoff, Seasonal variations, Snow loads, Remote sensing, Models.

42-346
Large scale effects of seasonal snow cover and temperature increase on runoff.
Rango, A., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.121-127, 7 refs., With French summary.
Martinec, J.
Runoff, Snowmelt, Snow cover effect, Temperature effects, Seasonal variations, Mountains.

42-347
Estimates of possible variations of snowmelt-runoff characteristics on climatic changes.
Kuchment, L.S., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.129-138, 3 refs., With French summary.
Motovilov, IU.G., Muzylev, E.L., Nazarov, N.A.
Runoff, Snowmelt, Climatic changes, Snow hydrology, Mathematical models, Human factors, Topographic features, Temperature effects, Seasonal variations.

42-348
Method for indexing the variability of alpine seasonal snow over large areas.
Fitzharris, B.B., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.139-150, 17 refs., With French summary.
Snow cover distribution, Snow accumulation, Snowfall, Mountains, Seasonal variations, Weather stations, Indexes (ratios), New Zealand.

42-349
Modelling large scale effects of snow cover.
Pipes, A., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.151-160, 7 refs., With French summary.
Quick, M.C.
Snow cover effect, Weather modification, Floods, Snowmelt, Heat balance, Stream flow, Watersheds, Mountains.

42-350
Snowmelt-runoff simulation model of a central Chile Andean basin with relevant orographic effects.
Peña, H., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.161-172, 5 refs., With French summary.
Nazarala, B.
Runoff, Snowmelt, Snow cover distribution, Hydrography, Ice melting, Models, Computer applications, Meltwater, Snow accumulation, Chile—Andes.

42-351
Utility of computer-processed NOAA imagery for snow cover mapping and streamflow simulation in Alberta.
Ferner, S., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.173-185, 16 refs., With French summary.
Sutherland, I.
Mapping, Snow cover distribution, Stream flow, Computer applications, Snowmelt, Mountains, Snow water equivalent, Remote sensing, Models, Canada—Alberta.

42-352
Snow cover area (SCA) is the main factor in forecasting snowmelt runoff from major river basins.
Ramamoorthi, A.S., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.187-198, 4 refs., With French summary.
Snow cover distribution, Runoff forecasting, Snowmelt, Snow water equivalent, Precipitation (meteorology), Temperature effects, Snow depth, Mountains, Remote sensing, Seasonal variations, Statistical analysis, India.

42-353
Modelling of snowmelt distribution for the estimation of basin-wide snowmelt using snow covered area.
Koike, T., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.199-212, 5 refs., With French summary.
Takahashi, Y., Yoshino, S.
Snow cover distribution, Snowmelt, Remote sensing, Models, Slope orientation, Forest canopy, Japan—Shozawa.

42-354
Operational airborne measurements of snow water equivalent and soil moisture using terrestrial gamma radiation in the United States.
Carroll, T.R., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.213-223, 9 refs., With French summary.
Snow water equivalent, Soil water, Airborne radar, Gamma irradiation, Flood forecasting, Water supply, Accuracy.

42-355
Determination of water equivalent of snow and the forecast of snowmelt runoff by means of isotopes in Turkey.
Ertan, I., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.225-239, 10 refs., With French summary.
Flood forecasting, Snow water equivalent, Runoff, Snowmelt, Snow depth, Snow hydrology, Isotope analysis, Gamma irradiation, Seasonal variations, Turkey.

42-356
Modelling the effects of agrotechnical measures on spring runoff and water erosion.
Motovilov, IU.G., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.241-251, 9 refs., With French summary.
Runoff, Snowmelt, Water erosion, Snow temperature, Soil temperature, Hydrothermal processes, Seasonal variations, Mathematical models, Temperature effects.

42-357
Influence of the variability of snow cover thickness on the intensity of water yield and duration of spring flood on a small river.
Dobroumov, B.M., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.253-263, 16 refs., With French summary.
Shukhobodskiĭ, A.B.
Snow depth, Meltwater, Floods, River flow, Runoff forecasting, Snowmelt, Snow water equivalent, Snow cover distribution.

42-358
Simple snowpack structure model and its application to mountain snowpack problems.
Dexter, L., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.265-275, 13 refs., With French summary.
Snow cover structure, Snow morphology, Metamorphism (snow), Time factor, Mountains, Models, Design, Temperature gradients, Computer applications.

42-359
Remote sensing of snow.
Rott, H., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.279-290, Refs. p.287-290., With French summary.
Snow cover distribution, Remote sensing, Microwaves, Snow optics, Climate, Snow water equivalent, Mapping, Runoff forecasting, Snowmelt, Spectra.

42-360
Discussion of the accuracy of NOAA satellite-derived global seasonal snow cover measurements.
Wiesnet, D.R., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.291-304, 11 refs., With French summary.
Ropelewski, C.F., Kukla, G.J., Robinson, D.A.
Snow cover distribution, Remote sensing, Snow depth, Snow water equivalent, Snowfall, Climatology, Charts, Accuracy, Reflectivity.

42-361
Remote sensing of snow characteristics in the southern Sierra Nevada.
Dozier, J., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.305-314, 21 refs., With French summary.
Snow cover distribution, Remote sensing, Mountains, Albedo, Mapping, Spectra, Grain size, Reflectivity.

42-362
Analysis of interannual variations of snow melt on Arctic sea ice mapped from meteorological satellite imagery.
Robinson, D.A., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium (on) Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.315-327, Refs. p.325-327., With French summary.
Scharfen, G., Barry, R.G., Kukla, G.
Snowmelt, Sea ice, Remote sensing, Ice surface, Albedo, Snow ice interface, Air temperature, Ice cover distribution, Cloud cover.

42-363
Snow melt on sea ice surfaces as determined from passive microwave satellite data.
Anderson, M.R., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.329-342, 13 refs., With French summary.
Snowmelt, Ice surface, Remote sensing, Sea ice, Microwaves, Diurnal variations, Arctic Ocean.

42-364
Estimating snowpack parameters in the Colorado River basin.
Chang, A.T.C., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.343-352, 11 refs., With French summary.
Snow cover distribution, River basins, Snowmelt, Runoff, Remote sensing, Watersheds, Mountains, Grain size, Flooding, Snow depth, Snow water equivalent, Microwaves, Snow density, United States—Colorado River.

42-365
Snow cover parameter retrieval from various data sources in the Federal Republic of Germany.
Schweiger, A.J., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.353-364, 13 refs., With French summary.
Armstrong, R., Barry, R.G.
Snow cover distribution, Snow depth, Snow water equivalent, Remote sensing, Microwaves, Mapping.

42-366
Global snow cover and the Earth's rotation.
Foster, J.L., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.365-374, 13 refs., With French summary.
Snow cover effect, Remote sensing, Ice conditions, Snow loads, Earth rotation, Snow depth, Radiometry, Volume, Microwaves, Snow accumulation.

42-367
Integration of digital terrain models into ground based snow and runoff measurement.
Whiting, J., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.375-387, 3 refs., With French summary.
Kiss, J.
Snow cover distribution, Runoff, Snow water equivalent, Models, Watersheds, Aerial surveys, Snowmelt, Topographic features, Computer applications, Snow surveys.

42-368
Classification model for spatial estimation of snowpack variables from satellite data.
Gunderson, R.W., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.389-401, 14 refs., With French summary.
Cheng, H.L., Bowles, D.S., Riley, J.P.
Snow cover distribution, Remote sensing, Runoff forecasting, Snowmelt, Snow depth, Snow water equivalent, Accuracy, Temperature effects, Albedo, Snow water content, Mathematical models.

42-369
Distribution of snow extent and depth in Alaska as determined from Nimbus-7 SMMR maps (1982-83).
Hall, D.K., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.403-413, 22 refs., With French summary.
Chang, A.T.C., Foster, J.L.
Snow cover distribution, Snow depth, Remote sensing, Microwaves, Radiometry, Maps, Grain size, Snow density, United States—Alaska.

42-370
Bidirectional reflectance of snow at 500-600 nm.
Steffen, K., *International Association of Hydrological Sciences. Publication,* 1987, No.166, International Symposium [on] Large Scale Effects of Seasonal Snow Cover, Vancouver, B.C., Aug. 9-22, 1987. Proceedings. Edited by B.E. Goodison, R.G. Barry and J. Dozier, p.415-425, 11 refs., With French summary.
Snow optics, Reflectivity, Snow structure, Solar radiation, Measuring instruments, Aerosols, Backscattering.

42-371
Dynamics of control system of the main power plant of a river icebreaker. [Dinamika sistemy upravleniia GEU rechnogo ledokola]
Kurakin, V.N., *Sudostroenie,* Aug. 1987, No.8, p.27-29, In Russian. 3 refs.
Icebreakers, River ice, Electric power.

42-372
Analysis of steratube operation of icebreakers and icebreaking cargo vessels. [Analiz opyta raboty deĭdvudnykh ustroĭstv ledokolov i ledokol'no-transportnykh sudov]
Grigor'ev, A.K., *Sudostroenie,* Aug. 1987, No.8, p.41-43, In Russian. 4 refs.
Icebreakers, Ships, Ice breaking, Transportation.

42-373
Recent state and problems of preparing permafrost bases of power-producing objects. [Sovremennoe sostoianie i problemy podgotovki vechnomerzlykh osnovaniĭ sooruzheniĭ energeticheskikh ob"ektov]
Fedoseev, V.I., *Energeticheskoe stroitel'stvo,* July 1987, No.7, p.11-13, In Russian.
Foundations, Permafrost bases, Hydrothermal processes, Settlement (structural), Industrial buildings, Permafrost beneath structures, Concrete structures, Deformations, Electric power, Permafrost hydrology.

42-374
Construction of grout curtains in perennially frozen rocks with preliminary thawing. [Sooruzhenie tsementatsionnykh zaves v vechnomerzlykh skal'nykh porodakh s predvaritel'nym ottaivaniem]
Chernobaeva, A.V., *Energeticheskoe stroitel'stvo,* July 1987, No.7, p.14-15, In Russian.
Frozen rocks, Fracture zones, Thawing, Permeability, Active layer, Permafrost hydrology.

42-375
Hepatics of Wrangel Island. [K flore pechenochnykh mkhov ostrova Vrangelia]
Zhukova, A.L., *Botanicheskiĭ zhurnal,* July 1987, 72(7), p.901-903, In Russian. 7 refs.
Mosses, Plant ecology, Plant physiology, Arctic landscapes, Vegetation, Ecosystems.

42-376
Partial analysis of vascular plant flora in the southern-tundra subzone of Taymyr Peninsula. [Opyt analiza partsial'nykh flor sosudistykh rasteniĭ v pod zone iuzhnykh tundr Taĭmyra]
Zanokha, L.L., *Botanicheskiĭ zhurnal,* July 1987, 72(7), p.925-932, In Russian. 17 refs.
Tundra, Plant ecology, Vegetation, Plant physiology, Arctic landscapes.

42-377
Ultrasonic attenuation in lithium iodate at low temperature. [Pogloshchenie ul'trazvuka v iodate litiia pri nizkikh temperaturakh]
Abramovich, A.A., et al, *Akademiia nauk SSSR. Doklady,* 1987, 293(4), p.834-835, In Russian. 5 refs.
Nedbaĭ, A.I., Salakhitdinov, F., Shutilov, V.A.
Ultrasonic tests, Semiconductors (materials), Low temperature tests, Sound transmission, Attenuation, Acoustics, Low temperature research.

42-378
Physiological and ecological correlates of temporally limited resources in the polar regions.
Hamner, W.M., Comparative physiology: life in water and on land. Edited by P. Dejours, L. Bolis, C.R. Taylor, and E.R. Weibel. Fidia research series, Vol.9, Padova, Liviana Press, 1987, p.447-457, Refs. p.455-457.
Ecology, Biomass, Acclimatization, Plankton, Polar regions, Sea ice.
The short pulse of primary production in polar regions is followed by a disproportionately long period when energy is unavailable. Phyletically diverse animals that depend on seasonally available resources have converged on a limited number of physiological, morphological, and behavioral adaptations to this cycle. Topographic and oceanographic features of each polar region have strongly influenced specific adaptations to polar climates. (Auth.)

42-379
Background to the Soviet glaciological studies from the Salut-6 orbital space station.
Williams, R.S., *Polar geography and geology,* Jan.-Mar. 1987, 11(1), p.1-11, 24 refs.
Research projects, Surveys, Spaceborne photography, Remote sensing, Monitors, Glaciers, Ice sheets.

42-380
Glaciological studies and experiments from the Salut-6 orbital space station.
Denisov, L.V., et al, *Polar geography and geology,* Jan.-Mar. 1987, 11(1), p.12-24, Translated from Issledovanie Zemli iz Kosmosa Vol.2, No.1, 1980. 2 refs.
Spaceborne photography, Photointerpretation, Remote sensing, Mountain glaciers, Snow surveys, Glacial hydrology.

42-381
Glacioclimatic conditions in the European Arctic in the Late Holocene.
Surova, T.G., et al, *Polar geography and geology,* Jan.-Mar. 1987, 11(1), p.50-57, For Russian original see 41-124.
Troitskiĭ, L.S., Skobeeva, E.I., Punning, IA.-M.K.
Paleoecology, Glaciation, Climatic changes.

42-382
Rates of accumulation on Late-Pleistocene glaciers in the eastern half of the USSR.
Grosval'd, M.G., et al, *Polar geography and geology,* Jan.-Mar. 1987, 11(1), p.58-68, For Russian original see 41-1638. 17 refs.
Glebova, L.N., Mikhallov, A.IU., Shamin, P.A.
Glacier alimentation, Glacier ablation, Paleoclimatology, Charts, Alpine glaciation.

42-383
Estimation of the volume of sea ice in the Arctic Ocean taking pressure ridges into account.
Mironov, E.U., *Polar geography and geology,* Jan.-Mar. 1987, 11(1), p.69-75, For Russian original see 41-1640. 12 refs.
Drift, Ice volume, Pressure ridges, Ice cover thickness, Seasonal variations, Sea ice distribution.

42-384
Possible routes of transport of atmospheric pollution into the Arctic and patterns of accumulation in snow and ice.
Krasovskaia, T.M., *Polar geography and geology,* Jan.-Mar. 1987, 11(1), p.76-80, For Russian original see 41-1645. 10 refs.
Atmospheric circulation, Maps, Air pollution, Human factors, Tundra, Soil pollution, USSR—Taymyr Peninsula.

42-385
Mechanical properties of the lubricant boundary layer.
Deriagin, B.V., *Soviet journal of friction and wear,* 1986, 7(5), p.1-6, Translated from Trenie i iznos. 20 refs.
Boundary layer, Ice, Sliding, Lubricants, Friction, Mathematical models.

42-386
Effect of moisture and low temperatures on the properties of polymeric and composite materials.
Starzhenetskaia, T.A., et al, *Mechanics of composite materials,* Nov.-Dec. 1986 (Pub. May 87), 22(6), p.772-775, Translated from Mekhanika kompozitnykh materialov. 3 refs.
Cherskiĭ, I.N.
Polymers, Plastics, Cold weather performance, Frost resistance, Low temperature research.

42-387
Kinetics of hydrolysis of p-nitrophenyl acetate in frozen suspensions of silica gel.
Sergiev, G.V., et al, *Kinetics and catalysis,* Nov.-Dec. 1986 (Pub. June 87), 27(No.6, pt.2), p.1281-1283, Translated from Kinetika i kataliz. 8 refs.
Sergiev, B.M., Konstantinova, N.R.
Low temperature research, Brines, Freezing, Unfrozen water content, Solids, Dispersions.

42-388
Late winter primary production and bacterial production in sea ice and seawater west of the Antarctic Peninsula.
Kottmeier, S.T., et al, *Marine ecology progress series,* Mar. 1987, 36(3), p.287-298, 71 refs.
Sullivan, C.W.
Bacteria, Biomass, Sea ice, Microbiology, Antarctica—Antarctic Peninsula.
The southern ocean is believed to be unproductive during winter due principally to low irradiance. On the 1985 Winter-cruise of the R/V *Polar Duke,* considerable microbial biomass and rates of primary production and bacterial production were found in sea ice up to 1.79 m thick. Microbial activity associated with sea ice was equal to that found in several meters of underlying seawater. Downwelling irradiance was adequate for net production near the surface of ice-free water and in sea ice. Approximately 40% of the newly fixed carbon incorporated by ice microalgae was assimilated into protein, suggesting that net growth was taking place without nutrient limitation. It is proposed that annual estimates of primary production should be revised upward by as much as 25% to account for this unexpected productivity during late winter in the southern ocean. In addition, sea ice should be viewed as a concentrated source of microalgal carbon for grazers such as krill during late winter when phytoplankton in the water column are scarce. *In situ* observations suggest that sea ice may also serve as an important nursery ground for larval krill during this time of year. It is concluded that both the quantity of sea ice associated production and seasonal timing of this production are important factors in antarctic trophodynamics. (Auth.)

42-389
Large-scale volcano-ground ice interactions on Mars.
Squyres, S.W., et al, *Icarus,* June 1987, 70(3), p.385-408, 45 refs.
Wilhelms, D.E., Moosman, A.C.
Extraterrestrial ice, Ground ice, Mars (planet).

42-390
Great salt debate. *Better roads,* June 1987, 57(6), p.30-35.
Salting, Road icing, Ice control, Cost analysis.

42-391
Winter maintenance planning and practice. *Better roads,* June 1987, 57(6), p.38-42.
Winter maintenance, Bridges.

42-392
Patching at low temperatures. *Better roads,* June 1987, 57(6), p.44-46.
Winter concreting, Road maintenance.

42-393
Pros and cons of insulating boards. *Better roads,* June 1987, 57(6), p.48-49.
Pavements, Insulation, Road icing, Frost protection.

42-394
Load-sensing hydraulics cut truck fuel use in snow removal. *Better roads,* June 1987, 57(6), p.50-52.
Winter maintenance, Snow removal, Cost analysis.

42-395
Northern Hemisphere ice sheets and planetary waves: a strong feedback mechanism.
Lindeman, M., et al, *Journal of climatology,* Mar.-Apr. 1987, 7(2), p.109-117, 28 refs.
Oerlemans, J.
Glacier mass balance, Ice sheets, Ice age theory, Atmospheric circulation, Ice air interface.

42-396
Energy balance in the coastal environment of James Bay and Hudson Bay during the growing season.
Rouse, W.R., et al, *Journal of climatology,* Mar.-Apr. 1987, 7(2), p.165-179, 12 refs.
Hardill, S.G., Lafleur, P.
Shores, Microclimatology, Permafrost, Plant physiology.

42-397
Snow cover data management: the role of WDC-A for Glaciology.
Barry, R.G., et al, *Hydrological sciences journal,* Sep. 1987, 32(3), p.281-295, With French summary. 38 refs.
Armstrong, R.L.
Snow surveys, Snow cover distribution, Data processing, Mapping, Glaciology.

42-398
Headwall retreat of ground-ice slumps, Banks Island, Northwest Territories.
Lewkowicz, A.G., *Canadian journal of earth sciences,* June 1987, 24(6), p.1077-1085, With French summary. 20 refs.
Ground ice, Ablation, Canada—Northwest Territories—Banks Island.

42-399
Some mechanical aspects of pingo growth and failure, western Arctic coast, Canada.
Mackay, J.R., *Canadian journal of earth sciences,* June 1987, 24(6), p.1108-1119, With French summary. 53 refs.
Pingos, Ground ice.

42-400
Recent glacier advances in the Premier Range, British Columbia.
Luckman, B.H., et al, *Canadian journal of earth sciences,* June 1987, 24(6), p.1149-1161, With French summary. 36 refs.
Harding, K.A., Hamilton, J.P.
Glacier oscillation, Climatic changes, Canada—British Columbia—Premier Range.

42-401
Characteristics and mass distribution of extraterrestrial dust from the Greenland ice cap.
Maurette, M., et al, *Nature,* Aug. 20, 1987, 328(6132), p.699-702, 21 refs.
Jéhanno, C., Robin, E., Hammer, C.
Cosmic dust, Dust, Ice sheets, Ice melting, Greenland.

42-402
Satellite altimeter measurements of the geoid in sea ice zones.
Laxon, S.W., et al, *Advances in space research,* 1986, 6(9), p.99-102, 11 refs.
Rapley, C.G.
Geodetic surveys, Geodesy, Sea ice, Polar regions, Radar echoes, Radar tracking, Mapping.
The Seasat radar altimeter provided surface height measurements to a precision better than 10 cm over the open ocean. The data have been used to produce maps of the ocean geoid which reveal details of sub-surface topography such as sea mounts, ocean trenches and mid-ocean ridges. In areas of the ocean covered by sea ice, however, the quasi-specular ice returns which occurred were incorrectly handled by the on-board processor. This resulted in a significant decrease in the precision of the surface height estimates. Consequently, researchers have generally eliminated data from regions where sea ice is suspected to have been present, including large areas of the antarctic ocean. A technique is described for significantly improving the height measurements over such areas permitting the mapping of the geoid in these regions. (Auth. mod.)

42-403
Temperature field of isolated buried pipeline. [Temperaturnoe pole izolirovannogo truboprovoda zalozhennogo v grunt],
Sander, A.A., et al, *Russia. Ministerstvo vyshego i srednego spetsial'nogo obrazovaniia. Izvestiia vyshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1987, No.4, p.86-91, In Russian. 3 refs.
Klimov, A.M.
Mathematical models, Underground pipelines, Thermal insulation, Soil temperature, Heat transfer.

42-404
Mathematical model of cutting ice with end-milling cutters. [Matematicheskaia model' processa frezerovaniia l'da kontsevof frezoi],
Khudiakov, V.N., et al, *Russia. Ministerstvo vyshego i srednego spetsial'nogo obrazovaniia. Izvestiia vyshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1987, No.4, p.113-115, In Russian. 3 refs.
Kuliashov, A.P.
Ice cutting, Mathematical models, Ice cover thickness, Equipment.

42-405
Optimizing the compositions of chemical admixtures and hydrothermal treatment regime for producing concrete items. [Optimizatsiia sostavov khimicheskikh dobavok i rezhimov teplovlazhnostnoi obrabotki pri izgotovlenii betonnykh izdelii],
Grushko, I.M., et al, *Russia. Ministerstvo vyshego i srednego spetsial'nogo obrazovaniia. Izvestiia vyshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura,* 1987, No.4, p.134-137, In Russian. 6 refs.
Lishanskii, B.A., Vedenskii, V.N., Puzyreva, N.P.
Prefabrication, Concretes, Concrete admixtures, Concrete curing, Concrete hardening, Concrete strength, Frost resistance.

42-406
Transformation of feldspars in the sandy podsol profile of northern taiga. [Otsenka preobrazovaniia polevykh shpatov v profile peschanogo podzola severnoi taigi],
Shoba, S.A., et al, *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie,* Apr.-June 1987, No.2, p.3-9, In Russian with English summary. 7 refs.
Ivanov, V.V., Komissarov, E.S., Gol'eva, A.A.
Forest soils, Taiga, Cryogenic soils, Soil profiles.

42-407
Mineralogy of clays in soils of forest tundra and northern taiga, Kola Peninsula. [Mineralogiia ilistogo veshchestva pochv lesotundry i severnoi taigi Kol'skogo poluostrova],
Gradusov, B.P., et al, *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie,* Apr.-June 1987, No.2, p.9-17, In Russian with English summary. 13 refs.
Urusevskaia, I.S.
Cryogenic soils, Tundra, Forest tundra, Taiga, Clay minerals, Mineralogy.

42-408
Effect of cultivation on thixotropic properties of tundra soils. [Vliianie sel'skokhoziaistvennogo osvoeniia na izmenenie tiksotropnykh svoistv tundrovykh pochv],
Manucharov, A.S., et al, *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie,* June-July 1987, No.3, p.42-47, In Russian with English summary. 7 refs.
Abrukova, V.V.
Tundra, Cryogenic soils, Thixotropy, Soil structure, Coagulation.

42-409
Pleistocene history of mountain forests and periglacial landscapes in southern East Siberia and Mongolia. [Istoriia gornykh lesov i problema perigliatsial'nykh landshaftov pleistotsena na iuge Vostochnoi Sibiri i v Mongolii],
Malaeva, E.M., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* July-Aug. 1987, No.4, p.58-65, In Russian. 27 refs.
Forest land, Mountain soils, Periglacial processes, Landscape types, Vegetation.

42-410
Mathematical modeling of the origin and forecasts of dangerous phenomena in nival-glacial belts. [Matematicheskoe modelirovanie vozniknoveniia i prognoz opasnykh iavlenii nival'no-gliatsial'nogo poiasa],
Bozhinskii, A.N., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* July-Aug. 1987, No.4, p.65-70, In Russian. 7 refs.
Slope processes, Mathematical models, Glaciers, Periglacial processes, Avalanches, Glacier surges, Nivation, Snow cover distribution, Forecasting, Alpine landscapes.

42-411
Role of glacial mudflows in the formation of Pleistocene deposits of the southern shores of Lake Baykal. [Znachenie selei v formirovanii otlozhenii pleistotsena iuzhnogo poberezh'ia Baĭkala],
Ivanovskiĭ, L.N., *Geografiia i prirodnye resursy,* July-Sep. 1985, No.3, p.35-42, In Russian. 12 refs.
Glacial lakes, Ice dams, Moraines, Mudflows, Glacial deposits.

42-412
Structure and functioning of microbiocenoses in soils of south-taiga facies of Priirtysh'e. [Struktura i funktsionirovanie mikrobiotsenozov v pochvakh iuzhno-taezhnykh fatsiĭ Priirtysh'ia],
Antonenko, A.M., *Geografiia i prirodnye resursy,* Oct.-Dec. 1985, No.4, p.51-55, In Russian. 8 refs.
Taiga, Cryogenic soils, Freeze thaw cycles, Soil composition, Soil microbiology.

42-413
Hydroclimatic impact on increment and revegetation of stands in bog-moss pine forests of Priirtysh'e. [Vliianie gidroklimaticheskikh uslovii na prirost i vozobnovlenie drevostoev sfagnovykh sosniakov Priirtysh'ia],
Kuz'menko, E.I., et al, *Geografiia i prirodnye resursy,* Oct.-Dec. 1985, No.4, p.56-61, In Russian. 22 refs.
Poliushkin, IU.V.
Forest soils, Seasonal freeze thaw, Taiga, Paludification, Land reclamation, Drainage.

42-414
Geographic analysis of flora in the Upper Chara Basin (Stanovoye Uplands). [Geograficheskiĭ analiz flory Verkhnecharskoĭ kotloviny (Stanovoye nagor'e)],
Garashchenko, A.V., *Geografiia i prirodnye resursy,* Oct.-Dec. 1985, No.4, p.61-70, In Russian. 24 refs.
Alpine tundra, Alpine landscapes, Deserts, Bald peaks, Vegetation, Classifications.

42-415
Paragenetic sequence of rock streams and other genetic types of loose deposits. [Paragenez kurumov s drugimi geneticheskimi tipami rykhlykh otlozheniĭ],
Govorushko, S.M., *Geografiia i prirodnye resursy,* Oct.-Dec. 1985, No.4, p.70-77, In Russian. 23 refs.
Rock streams, Solifluction, Moraines, Rock glaciers.

42-416
Role of snow cover in the formation of thermal regime of soils in Alpine tundras of the Verkhnyaya Kolyma Basin. [Rol' snezhnogo pokrova v formirovanii termicheskogo rezhima pochvy gornykh tundr basseĭna verkhneĭ Kolymy],
Alfimov, A.V., *Geografiia i prirodnye resursy,* Oct.-Dec. 1985, No.4, p.77-84, In Russian. 8 refs.
Alpine tundra, Cryogenic soils, Thermal regime, Snow cover effect.

42-417
Practical use of ice and snow for the national economy. [Problemy ispol'zovaniia l'da i snega v praktike narodnogo khoziaĭstva],
Alekseev, V.R., *Geografiia i prirodnye resursy,* Oct.-Dec. 1985, No.4, p.182-185, In Russian.
Ice physics, Ice (construction material), Snow physics, Snow (construction material), Economic analysis, Glaciology.

42-418
Strength of polymer fibrous composites under influence of cold climate factors.
Bulmanis, V.N., et al, International Symposium on Composite Materials and Structures, Beijing, China, June 10-13, 1986. Proceedings, Lancaster, PA, Technomic Publishing Co., 1986, p.451-457, 4 refs.
Urzhumtsev, IU.S.
DLC TA418.9.C6.I595 1986
Polymers, Cold weather performance, Static loads, Cold stress, Damage, Mathematical models, Temperature effects.

42-419
Experimental correlation study on tensile failure processes and acoustic emission of GFRP laminate under temperature environments.
Fujii, T., et al, International Symposium on Composite Materials and Structures, Beijing, China, June 10-13, 1986. Proceedings, Lancaster, PA, Technomic Publishing Co., 1986, p.919-924, 5 refs.
DLC TA418.9.C6.I595 1986
Construction materials, Tensile properties, Acoustic measurement, Fiber optics, Tests, Temperature variations, Damage, Detection.

42-420
Low temperature tensile tests of glass-reinforced plastics.
Mentl, V., International Symposium on Composite Materials and Structures, Beijing, China, June 10-13, 1986. Proceedings, Lancaster, PA, Technomic Publishing Co., 1986, p.961-965.
DLC TA418.9.C6.I595 1986
Plastics, Tensile properties, Low temperature tests, Fracturing, Construction materials.

42-421
Computer simulation for the analysis of radar echo-sounding of polar ice sheets.
Sivaprasad, K., et al, *IEEE transactions on geoscience and remote sensing,* Sep. 1987, GE-25(5), p.564-569, 23 refs.
Petrin, M.F.
Ice sheets, Radio echo soundings, Computer applications, Models.
The goal of the work presented here is to model the time-domain reflected radar returns from polar ice sheets so that greater information can be gained from those returns. The results obtained by modeling the ice sheets as lossless and multilayered media are shown to be consistent with the measured results. They also provide insights into the mechanisms affecting the radar returns. In particular, the simulations suggest that the internal reflections in the polar ice sheet are due more to the variation in layer-to-layer permittivity rather than the conductivity. In addition, the best qualitative agreement between the simulations and the observed data was found when the permittivity variations in each layer were varied randomly about the mean dielectric constant of the ice sheet. Radar sounding scope traces of antarctic ice are shown and compared to the derived model. (Auth. mod.)

42-422
Sea ice tracking by nested correlations.
Fily, M., et al, *IEEE transactions on geoscience and remote sensing,* Sep. 1987, GE-25(5), p.570-580, 18 refs.
Rothrock, D.A.
Sea ice, Radar echoes, Remote sensing, Beaufort Sea.

42-423
Acid pulses from snowmelt at acidic Cone Pond, New Hampshire.
Baird, S.F., et al, *Water, air, and soil pollution,* July 1987, 34(3), p.325-338, 31 refs.
Buso, D.C., Hornbeck, J.W.
Snowmelt, Snow impurities, Meltwater, Water chemistry, Chemical properties.

42-424
The street in the presence of glaze. Phenomena, skid resistance and prediction. [La route en présence de verglas. Phénomènes, adhérence, prévisions],
Livet, J., *Revue générale des routes et des aérodromes,* Mar. 1987, No.639, p.72-82, In French with English, German and Spanish summaries.
Glaze, Road icing, Ice forecasting, Skid resistance, Monitors, Meteorological factors.

42-425
Meteorology and winter trafficability. [Météorologie et viabilité hivernale],
Roussel, J.-J., *Revue générale des routes et des aérodromes,* Feb. 1987, No.638, p.47-56, In French with English, German and Spanish summaries. 3 refs.
Road icing, Meteorological factors, Trafficability, Winter maintenance.

42-426
Effect of solar radiation reflected from snow on solar cells.
Nakahara, K., et al, *Oyo Buturi,* Dec. 1986, 55(12), p.1182-1189, In Japanese with English summary. 9 refs.
Yui, N., Kataoka, S.
Solar radiation, Electric power, Snow optics, Reflection.

42-427
Near-inertial current oscillations in the vicinity of the Bering Sea marginal ice zone.
Lagerloef, G.S.E., et al, *Journal of geophysical research,* Oct. 15, 1987, 92(C11), p.11,789-11,802, 28 refs.
Muench, R.D.
Ocean currents, Sea ice, Ice edge, Ice cover effect, Bering Sea.

42-428
Geology of oil and gas deposits in the Siberian platform. [Geologiia mestorozhdeniĭ nefti i gaza Sibirskoĭ platformy],
Mel'nikov, N.V., ed, Novosibirsk, 1984, 118p., In Russian. For selected paper see 42-429. 9 refs.
Grebeniuk, V.V., ed.
DLC TN870.5.G394
Geologic structures, Permafrost distribution, Natural gas.

42-429
Hydrogeological conditions of the Srednetyungskoe gas-condensate deposit. [Gidrogeologicheskie usloviia Srednetiungskogo gazokondensatnogo mestorozhdeniia],
Surnin, A.I., Geologiia mestorozhdeniĭ nefti i gaza Sibirskoĭ platformy (Geology of oil and gas deposits in the Siberian platform) edited by N.V. Mel'nikov and V.V. Grebeniuk, Novosibirsk, 1984, p.104-115, In Russian. 9 refs.
DLC TN870.5.G394
Permafrost distribution, Geologic structures, Profiles, Natural gas.

42-430
Morphostructures of the central type in the Far East. [Morfostruktury tsentral'nogo tipa Dal'nego Vostoka],
Kulakov, A.P., ed, Vladivostok, 1984, 124p., In Russian. For selected paper see 42-431.
Tashchi, S.M., ed.
DLC QE613.5.S65M67
Mining, Mountains, Geomorphology, Tectonics, Fracture zones, Glacial hydrology, Naleds.

42-431
Naled plains and placer formation processes in northern Priokhot'e. [Naledny poliany i process rossypeobrazovaniia na severo-zapade Priokhot'ia],
Shamraĭ, E.I., Morfostruktury tsentral'nogo tipa Dal'nego Vostoka (Morphostructures of the central type in the Far East) edited by A.P. Kulakov and S.M. Tashchi, Vladivostok, 1984, p.99-107, In Russian. 12 refs.
DLC QE613.5.S65M67
Placer mining, Fracture zones, Naleds, Mountains, Tectonics.

42-432
Factors important to the development of frost heave susceptibility criteria for coarse-grained soils.
Vinson, T.S., et al, *Transportation research record,* 1986, No.1089, p.124-131, 16 refs.
Ahmad, F., Ricke, R.
Frost heave, Frost resistance, Soil structure, Grain size, Tests, Analysis (mathematics).

42-433
Control of frost penetration in road shoulders with insulation boards.
Kubo, H., et al, *Transportation research record,* 1986, No.1089, p.132-137, 7 refs.
Saksue, T.
Frost penetration, Roads, Thermal insulation, Frost heave, Frost protection, Damage, Countermeasures, Design, Resins.

42-434
Determination of the critical thaw-weakened period in asphalt pavement structures.
McBane, J.A., et al, *Transportation research record,* 1986, No.1089, p.138-146, 4 refs.
Hanek, G.
Thaw weakening, Roads, Bitumens, Pavements, Soil temperature, Freezing points, Measuring instruments.

42-435
Frost action predictive techniques: an overview of research results.
Johnson, T.C., et al, *Transportation research record,* 1986, No.1089, MP 2267, p.147-161, 30 refs.
Berg, R.L., DiMillio, A.
Frost action, Frost heave, Thaw weakening, Frost resistance, Freeze thaw tests, Soil freezing, Tests, Freeze thaw cycles, Models.
A 6-year research program has materially advanced the state of knowledge regarding frost heave and thaw weakening affecting roads and airfield pavements. The investigations included development and performance of laboratory tests, development of computer models, testing and data collection at field pavement test sites, and validation of the laboratory procedures and computer models against field data. Specific advances include development of a new freezing test to assess the frost susceptibility of soil; development and validation of a mathematical model serving to predict frost heave and thaw consolidation; development of a laboratory test procedure to determine the resilient modulus of frozen, thawed, and recovering granular soils; and conceptualization and testing of a technique for combining the frost heave and thaw consolidation model, the laboratory resilient modulus test, and a pavement response model to predict the nonlinear resilient modulus of granular soils and base course materials as variables in time and space.

42-436
Local melting of ice cover by thermal side effluent.
Sarraf, S., et al, *Journal of cold regions engineering,* Sep. 1987, 1(3), p.105-121, 11 refs.
Al-Saleh, W.
River ice, Ice melting, Icebound rivers.

42-437
Hydraulic analysis for ice-covered channel networks.
Pasquarell, G.C., et al, *Journal of cold regions engineering,* Sep. 1987, 1(3), p.122-132, 13 refs.
Shen, H.T.
Ice cover effect, Water flow, Channels (waterways).

42-438
Design/construction considerations for subarctic wastewater plant.
Damron, F.J., *Journal of cold regions engineering,* Sep. 1987, 1(3), p.133-144.
Waste treatment, Water treatment, Industrial buildings.

42-439
Signal level degradation due to snow accretion on a radome.
Shimba, M., et al, *Electronics letters,* July 2, 1987, 23(14), p.739-741, 2 refs.
Sato, T., Koike, H., Sato, K.
Snow cover effect, Radomes, Attenuation, Radio waves.

42-440
Antarctic automatic weather station data for the calendar year 1986.
Sievers, M.F., et al, Madison, University of Wisconsin, 1987, 268p.
Weidner, G.A., Stearns, C.R.
Weather observations, Weather stations, Measuring instruments, Data transmission.
The automatic weather station (AWS) networks provide surface weather observations for specific meteorological experiments on the antarctic continent. At three-hourly intervals the AWS measures air temperature, wind speed and direction at nominal heights of 3 m, and air pressure at the electronics enclosure, usually at a height of 1.5 m above the surface. In addition, some AWS units measure the vertical air temperature difference between 3 and 0.5 m above the surface and relative humidity at 3 m above the surface. Heights above the surface are nominal since snow accumulates after installation. Data transmitted by the AWS are received and stored by the ARGOS data collection system on the NOAA series of polar orbiting satellites. ARGOS data are retransmitted by the satellite and are received and processed to scientific units by a local user terminal at McMurdo. Tables and figures give information about individual studies, their locations, and the principal investigators with affiliation. AWS data are presented as monthly summaries and as daily raw data readings. The report concludes with descriptions of instrument calibration procedures for each element measured and brief reports about each AWS. (Auth. mod.)

42-441
Underwater technical work. Technology and mechanization. ¡Podvodno-tekhnicheskie raboty. Tekhnologiia i sredstva mekhanizatsiij,
Gol'din, E.R., Moscow, Transport, 1987, 200p. (Pertinent p.163-184), In Russian with abridged English table of contents enclosed. 37 refs.
Underwater ice, Subglacial observations, Hydraulic structures, Earthwork, Hydraulic jets, Diving, Excavation, Cold weather construction.

42-442
Freezing and warming of ground with the aid of cooling devices. ¡Zamorazhivanie i nagrev grunta s pomoshch'iu okhlazhdaiushchikh ustroĭstvj,
Vasil'ev, L.L., et al, Minsk, Nauka i tekhnika, 1986, 192p., In Russian with English table of contents enclosed. 198 refs.
Vasz, S.L.
Cold weather construction, Cryogenic soils, Swamps, Frozen ground, Thermopiles, Soil water, Phase transformations, Buildings, Roads, Foundations, Artificial freezing, Cold weather tests, Design, Computer applications.

42-443
Utilization of explosion energy in meliorative construction. ¡Ispol'zovanie energii vzryva v meliorativnom stroitel'stvej,
Kravets, V.G., et al, Moscow, Nedra, 1987, 208p., In Russian. 50 refs.
Luchko, I.A., Mikhaliuk, A.V.
Soil physics, Soil mechanics, Cohesion, Soil water, Saturation, Soil compaction, Foundations, Settlement (structural), Thixotropy, Explosion effects.

42-444
Piles in permafrost.
Heydinger, A.G., *Journal of cold regions engineering*, June 1987, 1(2), p.59-75, 32 refs.
Piles, Pile load tests, Permafrost.

42-445
Thawing frozen ground: field trials and analysis.
Oswell, J.M., et al, *Journal of cold regions engineering*, June 1987, 1(2), p.76-88, 3 refs.
Graham, M.D.
Ground thawing, Artificial thawing, Heating.

42-446
Ice transport by wind, wave, and currents.
Wake, A., et al, *Journal of cold regions engineering*, June 1987, 1(2), p.89-103, 22 refs.
Poon, Y.K., Crissman, R.
Ice floes, Drift, Wind factors, Water waves, Ocean currents.

42-447
Regional characteristics of snow cover in the mountain region of central Japan.
Watanabe, O., et al, *Journal of earth sciences Nagoya University*, Dec. 1986, Vol.34, p.67-108, 8 refs.
Snow cover structure, Snowfall, Snowflakes, Snow cover distribution, Japan.

42-448
Changes in mass balance, velocity, and surface profile along a flow line on Barnes Ice Cap, 1970-1984.
Hooke, R.L., et al, *Canadian journal of earth sciences*, Aug. 1987, 24(8), p.1550-1561, With French summary. 28 refs.
Glacier mass balance, Glacier flow, Ice sheets, Canada—Northwest Territories—Baffin Island.

42-449
High-strength cast concretes. ¡Effektivnye litye betonyj,
Dvorkin, L.I., et al, L'vov, Vyshcha shkola, 1986, 143p., In Russian with abridged English table of contents enclosed. 69 refs.
Kizima, V.P.
Concrete structures, Concrete aggregates, Concrete freezing, Cements, Concrete strength, Concrete hardening, Frost resistance, Concrete admixtures.

42-450
Magneto-elastic converters in navsi automation. ¡Magnitouprugie preobrazovateli v sudovoĭ avtomatikej,
Zhadobin, N.E., Leningrad, Sudostroenie, 1985, 95p. (Pertinent p.3-9, 87-89), In Russian with abridged English table of contents enclosed. 57 refs.
Ships, Ice navigation, Ice pressure, Ice loads, Measuring instruments.

42-451
Construction and operation of railroad tracks. ¡Ustroĭstvo i ekspluatatsiia putij,
Amelin, S.V., et al, Moscow, Transport, 1986, 238p. (Pertinent p.217-230), In Russian with abridged English table of contents enclosed. 15 refs.
Andreev, G.E.
Railroads, Subgrades, Railroad tracks, Cold weather operation, Ice prevention, Winter maintenance, Snowdrifts, Snow removal, Equipment.

42-452
Snow-sheds and solar screens for permafrost protection.
Esch, D.C., *Alaska. Dept. of Transportation and Public Facilities. Research notes*, July 1987, 7(1), 2p.
Permafrost preservation, Permafrost thermal properties, Snow cover effect, Permafrost beneath roads, Freeze thaw cycles, Solar radiation, Slope orientation, Frozen ground settling, Embankments, Countermeasures.

42-453
Evidence of a partially grounded Pleistocene ice sheet in Hudson Strait.
Woodworth-Lynas, C.M.T., *Newfoundland and Labrador Quaternary Association (NLGUA). Newsletter*, July 1986, No.7, Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-Core information publication, 86-F, 4p., 4 refs.
Ice mechanics, Ice sheets, Marine deposits, Pleistocene, Topographic features, Marine geology, Glaciation, Sediment transport, Canada—Hudson Strait.

42-454
Seabed investigations on Newfoundland's continental shelf.
Segall, M.P., et al, *Newfoundland journal of geological education*. Jan. 1986, 9(1), Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-Core information publication, 86-C, p.41-48, 2 refs.
Christian, A.D.
Marine geology, Marine deposits, Ocean bottom, Remote sensing, Acoustic measuring instruments, Canada—Newfoundland.

42-455
Geotechnical properties of two deep sea marine soils from Labrador Sea area.
Morin, P., et al, Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-Core publication, 86-24, Canadian Conference on Marine Geotechnical Engineering, 3rd, St-John's, Newfoundland, June 11-13, 1986. ¡Proceedingsj, ¡1986j, 21p., 21 refs.
Dawe, C.R.
Marine geology, Marine deposits, Scanning electron microscopy, Ocean bottom, Drill core analysis, Shear strength, X ray analysis, Canada—Labrador.

42-456
Columbia Glacier in 1986: 800 meter retreat.
Krimmel, R.M., *U.S. Geological Survey. Open-file report*, 1987, 87-207, 7p., 11 refs.
Glacier oscillation, Glacier flow, Seasonal variations, Velocity, Calving, United States—Alaska—Columbia Glacier.

42-457
Bureau of Land Management (BLM) cadastral survey monument tests for freeze thaw conditions.
Link, E., Anchorage, Alaska, U.S. Bureau of Land Management, ¡1987j, 35p., Unpublished manuscript.
Freeze thaw cycles, Structures, Frost heave, Construction materials, Tests, Damage.

42-458
Electro-expulsive aircraft deicing system.
Haslim, L.A., et al, U.S. National Aeronautics and Space Administration, Ames Research Center, Tech brief, ARC-11613, ¡1986j, 32p.
Lee, R.D.
Aircraft icing, Ice prevention, Electric heating, Ice removal, Helicopters.

42-459
Superstructure ice accretion guidance for Alaskan waters.
Feit, D., *U.S. National Weather Service. Technical procedures bulletin*, Dec. 1986, No.366, 3p. + graphs, 4 refs.
Ship icing, Ice accretion, Superstructures, Icing rate, Safety, Wind velocity, Sea water freezing, Seasonal variations, Air temperature, Water temperature

42-460
Digital data base of lakes on the North Slope, Alaska.
Walker, K.-M., et al, *U.S. Geological Survey. Water-Resources Investigations report*, 1986, No.86-4143, 13p.
York, J., Murphy, D., Sloan, C.E.
Lake ice, Lakes, Ice cover thickness, Ice conditions, Remote sensing, Permafrost distribution, Water reserves, Computer applications, Data processing, United States—Alaska—North Slope.

42-461
Quantity and quality of urban runoff from the Chester Creek basin, Anchorage, Alaska.
Brabets, T.P., *U.S. Geological Survey. Water-Resources Investigations report*, 1987, No.86-4312, 58p., 13 refs.
Runoff forecasting, Stream flow, Snowmelt, Surface waters, Water chemistry, Water pollution, Rain, Suspended sediments, United States—Alaska—Chester Creek.

42-462
Frost resistance of F-concrete.
Vesikari, E., *Finland. Technical Research Centre. Research report*, Apr. 1987, No.474, 35p., 4 refs.
Concrete freezing, Frost resistance, Freeze thaw tests, Concrete strength, Microstructure, Salinity, Porosity, Cracking (fracturing), Corrosion, Compressive properties.

42-463
Factors affecting water migration in frozen soils.
Xu, X., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1987, CR 87-09, 16p., ADA-184 796, 20 refs.
Oliphant, J.L., Tice, A.R.
Soil water migration, Unfrozen water content, Frozen ground physics, Tests, Nuclear magnetic resonance, Temperature gradients, Water chemistry, Density (mass/volume), Temperature effects.
Soil-water potential was measured on three soils and influencing factors, including water content, soil texture, dry density and temperature, were investigated. The soil-water potential in unsaturated, unfrozen soils decreases with decreasing soil water content and soil dispersion, and increases with increasing temperature and dry density. Unfrozen water contents were determined by pulsed nuclear magnetic resonance and three factors thought to affect the unfrozen water content at a given temperature were investigated. Of these three factors, only increasing the salt concentration caused a large change in the unfrozen water versus temperature curves. Water migration in an unsaturated frozen soil (Morin clay) was determined in horizontally closed soil columns under linear temperature gradients. The flux of water migration was calculated from the water distribution curves before and after testing. The flux is directly proportional to the temperature gradient and inversely proportional to the square root of the test duration, and decreases with decreasing temperature and soil dry density.

42-464
Proceedings, 5th International Congress, International Association of Engineering Geology, 20-25 October 1986, Buenos Aires.
International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986, Rotterdam, A.A. Balkema, 1986, 4 vols., With French summaries. Refs. passim. For selected papers see 42-465 through 42-470.
Engineering geology, Frozen ground physics, Freeze thaw cycles, Geomorphology, Meetings.

42-465

***In-situ* observations on an expansive clay subjected to freezing and thawing.**

Wagner, J.F., et al, International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986. Proceedings, Rotterdam, A.A. Balkema, 1986, p.763-768, 13 refs., With French summary.

Czurda, K.A.

Freeze thaw cycles, Clays, Ice lenses, Frost heave, Frost penetration, Soil water migration, Geocryology, Tests.

42-466

Analysis of the damage of the structure caused by the freezing and thawing of the subsoil.

Li, Y., et al, International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986. Proceedings, Rotterdam, A.A. Balkema, 1986, p.923-929, 5 refs., With French summary.

Bao, Y.

Freeze thaw cycles, Frozen ground settling, Foundations, Buildings, Damage, Compressive properties, Cold storage, Settlement (structural), Temperature effects.

42-467

Shear strength of sands during increasing pore pressure.

Kaczyński, R.R., International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986. Proceedings, Rotterdam, A.A. Balkema, 1986, p.981-989, With French summary.

Frozen ground strength, Shear strength, Water pressure, Soil water, Sands, Microstructure, Shafts (excavations), Linings, Friction.

42-468

Characteristic parameters of interest to the effects of the hydroelectric development of the Spanish glacier lakes.

Sáenz Ridruejo, C., et al, International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986. Proceedings, Rotterdam, A.A. Balkema, 1986, p.1207-1215, 11 refs., With French summary.

Gil Sauri, M.A.

Glacial lakes, Geomorphology, Electric power, Glaciology, Spain.

42-469

Damage of ice cone and ice dome to railway construction and its prevention and treatment.

Zheng, Q., International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986. Proceedings, Rotterdam, A.A. Balkema, 1986, p.1559-1565, 6 refs., With French summary.

Railroad equipment, Ice formation, Freeze thaw cycles, Ice prevention, Permafrost beneath roads, Ice removal, Damage, Structures, Soil water, Engineering.

42-470

Engineering geology of high-erect power transmission lines in China and modern computing technique.

Di, Z., et al, International Congress of the International Association of Engineering Geology, 5th, Buenos Aires, Oct. 20-25, 1986. Proceedings, Rotterdam, A.A. Balkema, 1986, p.1567-1572, With French summary.

Lu, W.

Engineering geology, Transmission lines, Frozen ground strength, Sands, Karst, Loess, Computer applications, China.

42-471

Fast glacier flow: ice streams, surging, and tidewater glaciers.

Clarke, G.K.C., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8835-8841, 59 refs.

Glacier flow, Glacier mass balance, Glacier surges, Greenland, Antarctica.

An overview is presented of fast flowing glaciers, showing many of the variations that have been noted among different glacier types. Glaciers and ice streams of Greenland and Antarctica serve as examples in the discussions. Jakobshavns Glacier in Greenland is the world's fastest moving glacier at 8,360 m/yr. Rutford Ice Stream and Ice Stream B in West Antarctica flow at rates of 400 and 827 m/yr, respectively. Discussions ensue as to how fast glaciers should flow, and the causes of fast flow and sources of instability.

42-472

Antarctic ice streams: a review.

Bentley, C.R., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8843-8858, 69 refs.

Ice sheets, Glacier flow, Ice creep, Ice models, Antarctica—Ross Ice Shelf.

An ice stream is a part of an inland ice sheet that flows rapidly through the surrounding ice. The "Ross ice streams," which flow through the West Antarctic inland ice into the Ross Ice Shelf, are distinct in character, differing even from other ice streams in the marine ice sheet of West Antarctica. Their surface elevation profiles are low, their bed slopes are low and smooth, and their driving stresses diminish monotonically downglacier. In transverse profile they are broader in relation to ice thickness and exhibit shallower subglacial troughs, than other ice streams. Many models for the fast sliding of glaciers have been applied to the Ross ice streams; most have included in some form a reduction in basal drag resulting from a lesser effective than glaciostatic pressure at the bed. The recent discovery of a very small effective pressure beneath one ice stream consequently has led to some gross errors in the velocities predicted by the models. The difficulty may be resolved if it is true, as recent experiments suggest, that ice stream B, and by extrapolation other Ross ice streams as well, slide on a deforming bed that absorbs most or all of the differential motion between the ice and the bedrock. (Auth.)

42-473

Morphology of Ice Streams A, B, and C, West Antarctica, and their environs.

Shabtaie, S., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8865-8883, 37 refs.

Whillans, I.M., Bentley, C.R.

Glacier ice, Ice structure, Echo sounding, Mapping, Antarctica—West Antarctica.

Airborne radar soundings of the ice sheet surface made in 1984-1985 together with elevations measured by oversnow traverses between 1957 and 1964 have been used to produce a surface elevation map of Ice Streams A, B, and C and much of the region around them. The surfaces of active Ice Streams A and B exhibit a longitudinal ridge-trough topography of uncertain origin. Prominent surface valleys are associated with most of their marginal shear zones. There is a deep subglacial trough beneath the grid northeastern side of Ice Stream A that connects to the subglacial trough beneath Reedy Glacier. Between Ice Streams B1 and B2, the tributaries of Ice Stream B, there is a complex zone containing several regions of undisturbed ice separated by bands of disturbed ice, which suggest that "rafts" of ice are being incorporated into the ice streams. Inactive Ice Stream C differs from the two active streams in surficial and basal characteristics. No elongated ridges and troughs are observed; instead, the ice stream surface exhibits several terraces, including some maxima and minima in elevation. Radar sounding reveals areas where basal echoes are strong and steady, indicating subglacial water, alternating with areas of weaker echoes with short fading lengths. (Auth. mod.)

42-474

Ice dynamics at the mouth of Ice Stream B, Antarctica.

Bindschadler, R.A., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8885-8894, 39 refs.

Stephenson, S.N., MacAyeal, D.R., Shabtaie, S.

Ice sheets, Glacier flow, Ice mechanics, Glacier mass balance, Antarctica—West Antarctica.

Field data collected at the mouth of Ice Stream B show that the flow dynamics of this region are distinctly different than either the major portion of the ice stream upstream or the ice shelf downstream. Surface slopes in this region are as low as ice shelf surface slopes, yet with the exception of patches of ice which may be floating, the ice is grounded. Basal shear stress is negligible. The surface is generally crevasse-free. Features similar to ice rises are observed upstream of the grounding line. The flow is laterally extensive and longitudinally compressive, but there are large local variations of the strain rate from the regional trends. The boundary between the two major tributaries to Ice Stream B is characterized by a band of strain rates much smaller than average. Detailed measurements at the downstream B network confirm that there is a strong correlation between surface topography and strain rates. The strain rates indicate that the undulating topography is locally generated. A velocity profile across the crevassed northern margin shows that the decrease of velocity toward the edge is nearly linear. A calculation of ice stream discharge at this location agrees closely with two rather rough estimates of balance flux and is considerably larger than a third estimate. (Auth. mod.)

42-475

Tensile strength of frozen silt.

Zhu, Y., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1987, CR 87-15, 23p., ADA-185 483, 8 refs.

Carbee, D.L.

Frozen ground strength, Tensile properties, Soil physics, Strains, Sediments, Unfrozen water content.

Constant strain-rate tension tests were conducted on remolded saturated frozen Fairbanks silt at various temperatures, strain rates, and densities. It was found that the critical strain rate of the ductile-brittle transition is not temperature-dependent at temperatures down to -5 C, but varies with density. The transition occurs at a strain rate of 0.01/s for medium-density silt and 0.0005/s for low-density silt. The peak tensile strength decreases considerably with decreasing strain rate for ductile failure, but it decreases slightly with increasing strain rate for brittle fracture. The failure strain remains almost constant at temperatures lower than about -2 C, but it varies with density and strain rate at -5 C. The initial tangent modulus is independent of strain rate and increases with decreasing temperature and density.

42-476

Till beneath Ice Stream B. 1. Properties derived from seismic travel times.

Blankenship, D.D., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8903-8911, 29 refs.

Bentley, C.R., Rooney, S.T., Alley, R.B.

Ice sheets, Marine geology, Subglacial observations, Sediments, Seismic reflection, Antarctica—West Antarctica.

Seismic experiments conducted on Ice Stream B, part of the marine ice sheet of West Antarctica, show a meters-thick layer immediately beneath the 1000-m-thick ice. A seismic experiment consisting of wide-angle reflection profiling along a line parallel to ice stream flow was conducted to determine the properties of this layer. Inversion of seismic travel times yields a compressional wave speed of less than 1700 m/s and a shear wave speed less than 160 m/s for the layer. These very low wave speeds imply that the material in the layer is highly porous and is saturated with water at a high pore pressure. Based on wave speeds in other saturated, unconsolidated sediments, it is suggested that a porosity substantially greater than 0.32, probably around 0.4, and an excess of overburden pressure over pore pressure of only 50 kPa (0.5 bar) characterize the layer at this location. (Auth.)

42-477

Till beneath Ice Stream B. 2. Structure and continuity.

Rooney, S.T., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8913-8920, 18 refs.

Blankenship, D.D., Alley, R.B., Bentley, C.R.

Ice sheets, Subglacial observations, Sediments, Seismic reflection, Antarctica—West Antarctica.

During the 1984-1985 antarctic field season, 8.3 km of high-resolution seismic reflection data were collected in order to image a thin till layer beneath Ice Stream B, West Antarctica. Two parallel seismic reflection lines were oriented transverse to ice flow. These data show that the till layer varies in thickness but is continuous over almost the entire length of the profiles with an average thickness of 6.5 m. The upper surface of the till layer is smooth, but the lower boundary is fluted parallel to flow. These till-filled flutes are as much as 13 m deep and 1000 m across. Nowhere on the profiles can any feature be discerned to penetrate more than a few meters into the ice from the bed. Reflection events from lithified sediments of unknown type are observed to be truncated by the till in an angular unconformity. (Auth.)

42-478

Till beneath Ice Stream B. 3. Till deformation: evidence and implications.

Alley, R.B., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8921-8929, 58 refs.

Blankenship, D.D., Bentley, C.R., Rooney, S.T.

Ice sheets, Subglacial observations, Sediments, Glacier flow, Antarctica—West Antarctica.

Most of the velocity of ice stream B near the Upstream B cusp (UpB), West Antarctica, appears to arise from deformation of a seismically detected, subglacial till layer that averages 6 m thick. Available evidence indicates that the entire thickness of this till layer is deforming and is eroding subjacent bedrock into flutes parallel to ice flow and hundreds of meters across. The resulting till flux beneath UpB is equivalent to an average erosion rate of about 0.4 mm/yr in the catchment area and suggests that till deltas tens of kilometers long have been deposited at the grounding line during the Holocene. Such deltas should be characterized by partial ice-till decoupling across a water film and by a small ice-air surface slope. (Auth.)

42-479

Till beneath Ice Stream B. 4. A coupled ice-till flow model.

Alley, R.B., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8931-8940, 32 refs.

Blankenship, D.D., Rooney, S.T., Bentley, C.R.

Ice sheets, Sediments, Flow rate, Models, Antarctica—West Antarctica.

A nonsteady model of an ice stream flowing on deforming till shows that the system responds rapidly and in a stable manner to reasonable marginal perturbations. For the model one-dimensional flow and continuity of ice and till are required; linear viscous till rheology and balance between the driving stress for ice flow and the resistive stress at the bed are assumed. This allows coupled equations to be written for the time rate of change of the ice thickness and the till thickness in terms of these thicknesses and the till viscosity. An analytic, steady state solution for ice stream B shows that till viscosity decreases slowly downstream, probably in response to decreasing effective pressure downstream. Nonsteady numerical experiments with fixed ice thicknesses at the ends show that a marginal perturbation causes a wave of adjustment to travel the length of the ice stream in about 50 years, with a new steady state in about 200 years. Changes in till thickness tend to moderate perturbations in the ice and thus stabilize the system. (Auth.)

42-480

Use of a new finite element continuity model to study the transient behavior of Ice Stream C and causes of its present low velocity.

Fastook, J.L., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8941-8949, 10 refs.

Ice sheets, Flow rate, Models, Subglacial observations, Antarctica—West Antarctica.

The finite element technique is used to solve the continuity equation for two modeling experiments which investigate the

response of Ice Stream C to changes in the boundary conditions. By comparison of the results of these experiments it is possible to delineate the mechanism responsible for the anomalously low observed velocity. These experiments are (1) the sudden capture of a major portion of Ice Stream C's catchment area by neighboring Ice Stream B and (2) the sudden removal of a sliding bed condition along a major portion of Ice Stream C. The results of these experiments favor the second scenario over the first as being responsible for the present state of Ice Stream C and suggest that the sliding condition on Ice Stream C disappeared approximately 7000 years ago. (Auth.)

42-481

Glaciological studies on Rutford Ice Stream, Antarctica.

Doake, C.S.M., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9951-8960, 21 refs.

Ice sheets, Flow rate, Basal sliding, Glacier mass balance, Antarctica—Rutford Ice Stream, Antarctica—Ronne Ice Shelf.

Rutford Ice Stream drains part of the West Antarctic ice sheet into Ronne Ice Shelf. Much of the drainage basin has a bed well below sea level and could undergo substantial change if a climatic warming were to cause sustained thinning of Ronne Ice Shelf. Snow accumulation data suggest that an accumulation rate of 0.51 mg/sq m/yr is required for balance. Velocities at 5 sites have been calculated using doppler satellite position measurements. When the velocities are combined with cross-sectional areas of the ice stream measured by radio echo sounding, mass flux figures show that drag at the sidewalls and on the base must decrease downstream toward the grounding line. The increasing influence of buoyancy forces on ice stream motion is also shown by the steady rise in the ratio of bedrock depth to ice thickness going downstream along the network. Below the grounding line that was found to cross the middle part of the earlier network is a zone stretching for a further 100 km where it can now be shown that the ice stream is intermittently grounded. In these grounded areas the glacier bed is raised with respect to the surrounding seabed and forms sekerlike features. Surface elevations over the grounded areas are less than 30 m above those needed for hydrostatic equilibrium. (Auth.)

42-482

Columbia Glacier, Alaska: changes in velocity 1977-1986.

Krimmel, R.M., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8961-8968, 9 refs.

Vaughn, B.H.

Glacier oscillation, Glacier flow, United States—Alaska—Columbia Glacier.

42-483

Analysis of time series of glacier speed: Columbia Glacier, Alaska.

Walters, R.A., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8969-8975, 13 refs.

Dunlap, W.W.

Tides, Glacier oscillation, Glacier flow, Diurnal variations, United States—Alaska—Columbia Glacier.

42-484

Gravity anomaly at a Pleistocene lake bed in NW Alaska interpreted by analogy with Greenland's Lake Tasersssuq and its floating ice tongue.

Barnes, D.F., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8976-8984, 38 refs.

Gravity anomalies, Glacial lakes.

42-485

Rapid soft bed sliding of the Puget glacial lobe.

Brown, N.E., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8985-8997, 59 refs.

Hallet, B., Booth, D.B.

Glacier flow, Glacial hydrology, Basal sliding.

42-486

Sliding phenomena in a steep section of Balmorngletscher, Switzerland.

Röthlisberger, H., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.8999-9014, 17 refs.

Ice structure, Avalanches, Basal sliding, Switzerland—Balmorngletscher.

42-487

Observations on the distribution and characteristics of potholes on surging glaciers.

Sturm, M., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9015-9022, 9 refs.

Glacier surfaces, Glacier surges, Glacial hydrology.

42-488

Subglacial till: a physical framework for its properties and processes.

Clarke, G.K.C., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9023-9036, 50 refs.

Glacial deposits, Glacial hydrology, Glacier mass balance, Subglacial observations.

42-489

Propagation of a glacier surge into stagnant ice.

Raymond, C., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9037-9049, 8 refs.

Johannesson, T., Pfeffer, T., Sharp, M.

Glacier surges, Basal sliding, Glacier flow, Ice deformation, United States—Alaska—Variegated Glacier.

42-490

Fast tidewater glaciers.

Meier, M.F., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9051-9058, 29 refs.

Post, A.

Glacier flow, Glacier surges, Calving, Glacial hydrology, United States—Alaska—Columbia Glacier.

42-491

Sediment deformation beneath glaciers: rheology and geological consequences.

Boulton, G.S., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9059-9082, 27 refs.

Hindmarsh, R.C.A.

Subglacial observations, Sediments, Glacial hydrology, Basal sliding, Iceland—Breidamerkurjökull.

42-492

Glacier surge mechanism based on linked cavity configuration of the basal water conduit system.

Kamb, B., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9083-9100, 35 refs.

Glacier surges, Subglacial drainage, Glacial hydrology, United States—Alaska—Variegated Glacier.

42-493

Realistic, yet simple bottom boundary conditions for glaciers and ice sheets.

Lliboutry, L., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9101-9109, 34 refs.

Boundary value problems, Glacier beds, Ice sheets, Glacier flow, Rheology.

42-494

Theory of glacier surges.

Fowler, A.C., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9111-9120, 50 refs.

Glacier flow, Glacier surges, Models, Basal sliding.

42-495

How do glaciers surge? A review.

Raymond, C.F., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9121-9134, 75 refs.

Glacier flow, Glacier surges, Basal sliding, Glacial hydrology, Water pressure.

42-496

Polar basal melting on Mars.

Clifford, S.M., *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9135-9152, 121 refs.

Ice sheets, Ice melting, Mass balance, Mars (planet).

42-497

Snow load effect on the Earth's rotation and gravitational field, 1979-1985.

Chao, B.F., et al, *Journal of geophysical research,* Aug. 10, 1987, 92(B9), p.9415-9455, 32 refs.

Gravity, Snow loads, Earth rotation.

A global, monthly snow depth data set has been generated from the Nimbus 7 satellite observations using passive microwave remote-sensing techniques. In this paper 7 years of data, 1979-1985, are analyzed to compute the snow load effects on the earth's rotation and low-degree zonal gravitational field. A uniform sea level decrease has been assumed in order to conserve water mass. The resultant time series show dominant seasonal cycles. The excitation power of the Chandler wobble due to the snow load is estimated to be about 25 dB less than the power needed to maintain the observed Chandler wobble. The superior quality of the satellite data over conventional data acquired by ground observations and modeling is demonstrated. The role of atmospheric water and the problems arising from the lack of snow load observations over the antarctic and Greenland ice sheets are also discussed. (Auth. mod.)

42-498

Radiative cooling and frost formation on surfaces with different thermal emittance: theoretical analysis and practical experience.

Hamberg, I., et al, *Applied optics,* June 1, 1987, 26(11), p.2131-2136, 15 refs.

Radiant cooling, Hoarfrost, Frost forecasting, Thermal insulation, Protective coatings.

42-499

Thermal regime of peatlands in subarctic eastern Canada.

Moore, T.R., *Canadian journal of earth sciences,* July 1987, 24(7), p.1352-1359, With French summary, 33 refs.

Peat, Soil temperature, Snow cover effect.

42-500

Heat pump for subzero climates using vacuum freezing process.

Koren, A., Israel, National Council for Research and Development, N.C.R.D., 86-7, Bi-National Israeli-Norwegian Symposium on Refrigeration Engineering, Tel-Aviv, Jan. 19-22, 1986. Proceedings, Jerusalem, 1987, p.117-126, 3 refs.

Vacuum freezing, Pumps, Desalting, Heat transmission, Sea water, Refrigeration, Ice water interface.

42-501

Heat pump package at the "Gullfaks B" oil production platform—the first heat pump installation at the Norwegian shelf.

Lunde, H., Israel, National Council for Research and Development, N.C.R.D., 86-7, Bi-National Israeli-Norwegian Symposium on Refrigeration Engineering, Tel-Aviv, Jan. 19-22, 1986. Proceedings, Jerusalem, 1987, p.159-172.

Pumps, Heating, Offshore structures, Oil wells, Refrigeration, Equipment.

42-502

Proceedings of the Alaskan Gas Utilization Workshop, Fairbanks, AK, June 30-July 2, 1987.

Alaskan Gas Utilization Workshop, Fairbanks, Alaska, June 30-July 2, 1987, Sep. 1987, 118p., 24 refs.

Gas production, Natural resources, Petroleum industry, Logistics, Pipelines, Meetings, Hydrates, United States—Alaska.

42-503

Investigation into the effects of ice and snow accumulation on drumskin radome antennas.

Young, P.M., et al, International Conference on Antennas and Propagation, ICAP 87, 5th, Mar. 30-Apr. 2, 1987. Proceedings, Pt.1, London, Institution of Electrical Engineers, 1987, p.141-144, 5 refs.

Stuckey, R.L.

Radomes, Antennas, Ice accretion, Ice removal, Ice prevention, Snow accumulation, Ice cover effect, Radio communication, Models, Snow cover effect, Snow removal.

42-504

Detection of objects buried in snow using microwave holography.

Sakamoto, Y., et al, International Conference on Antennas and Propagation, ICAP 87, 5th, Mar. 30-Apr. 2, 1987. Proceedings, Pt.2, London, Institution of Electrical Engineers, 1987, p.364-367, 3 refs.

Tajiri, K., Sawai, T., Aoki, Y.

Holography, Snow cover effect, Detection, Microwaves, Avalanches, Buildings.

42-505

Current and future offshore activities in Canada.

Hnatiuk, J., *Journal of petroleum technology,* June 1987, 39(6), p.717-723, 14 refs. For another version see 38-3237.

Offshore structures, Artificial islands, Marine transportation, Ice cover thickness, Ice conditions, Sea ice, Caissons, Hydrocarbons, Offshore drilling, Canada.

42-506

Weibull-distributed radar clutter reflected from sea ice.

Ogawa, H., et al, *Institution of electronics, information and communication engineers. Transactions,* Feb. 1987, E70(2), p.116-120, 28 refs.

Radar echoes, Sea ice distribution, Data processing.

42-507

Performance of thermoplastic stripping in Alaska.

Woodward-Clyde Consultants, *Alaska. Dept. of Transportation and Public Facilities. Report,* Sep. 1982, FHWA-AK-RD-83-22, 35p. + append., 8 refs.

Plastics, Markers, Road maintenance, Snow removal, Winter maintenance, Chemical ice prevention, Freeze thaw cycles, Damage.

42-508

Air duct systems for roadway stabilization over permafrost areas.

Zarling, J.P., et al, *Alaska. Dept. of Transportation and Public Facilities. Report,* Mar. 1984, FHWA-AK-RD-84-10, 37p. + append., 8 refs. For another version see 38-1365.

Connor, B., Goering, D.J.

Permafrost beneath roads, Permafrost preservation, Ducts, Heat transfer, Slope stability, Soil stabilization, Thermal regime, Culverts, Design criteria, Models.

42-509

Solar assisted culvert thawing device, Phase 2.

Zarling, J.P., et al, *Alaska. Dept. of Transportation and Public Facilities. Report,* May 1983, AK-RD-83-36, 27p., 8 refs. For Phase 1 see 38-2781.

Murray, D.H.

Culverts, Ice formation, Solar radiation, Artificial thawing, Ice melting, Roads, Pumps, Design.

42-510

Coatings for aircraft in cold weather conditions.

Lakio-Haapio, M., *Metal finishing,* July 1987, 85(7), p.41-44, 2 refs.

Cold weather operation, Winter maintenance, Protective coatings, Damage, Airplanes.

42-511
Spitsbergen—mining coal within the Arctic circle.
Brugmans, P.J., *Mining magazine,* June 1987, 156(6), p.479-487.
Mining, Dust control, Ventilation, Permafrost.

42-512
Infrared system detects condensation, icing conditions.
Stefanides, E.J., *Design news,* Mar. 9, 1987, 43(5), p.110-112.
Ice prevention, Monitors.

42-513
Research and development on large-diameter line pipe for arctic usage.
Terasaki, F., et al, *Sumitomo search,* Nov. 1986, No.33, p.72-85, 27 refs.
Hashimoto, T., Komizo, Y.
Pipes (tubes), Welding, Steels.

42-514
Water or ice in the Martian regolith? Clues from rampart craters seen at very high resolution.
Mouginis-Mark, P.J., *Icarus,* Aug. 1987, 71(2), p.268-286, 41 refs.
Mars (planet), Extraterrestrial ice.

42-515
Interannual variability of Mars' south polar cap.
James, P.B., et al, *Icarus,* Aug. 1987, 71(2), p.298-305, 18 refs.
Malolepszy, K.M., Martin, L.J.
Mars (planet), Extraterrestrial ice.

42-516
Martian north polar cap and circumpolar clouds: 1975-1980 telescopic observations.
James, P.B., et al, *Icarus,* Aug. 1987, 71(2), p.306-312, 12 refs.
Pierce, M., Martin, L.J.
Mars (planet), Extraterrestrial ice.

42-517
Dynamical modeling of a planetary wave mechanism for a Martian polar warming.
Barnes, J.R., et al, *Icarus,* Aug. 1987, 71(2), p.313-334, 43 refs.
Hollingsworth, J.L.
Air temperature, Stratosphere, Atmospheric circulation, Mars (planet).

42-518
White paint for highway thaw settlement control.
Reckard, M.K., *Alaska. Dept. of Transportation and Public Facilities. Report,* Mar. 1985, FHWA-AK-RD-85-16, 35p., 12 refs.
Protective coatings, Frozen ground settling, Permafrost beneath roads, Frost heave, Settlement (structural), Permafrost thermal properties, Road icing, Ground thawing, Skid resistance.

42-519
Ceramic insulation; final report.
Rezek, J.F., *Alaska. Dept. of Transportation and Public Facilities. Report,* June 1983, AK-RD-82-24, 24p., 2 refs.
Thermal insulation, Thermal conductivity, Chemical analysis, Coatings, Analysis (mathematics).

42-520
Life cycle costing of paved Alaskan highways—user manual, Vol.2.
Saraf, C., et al, *Alaska. Dept. of Transportation and Public Facilities. Report,* June 1982, AK-RD-83-6, 31p. + appends., 6 refs.
Chuang, J., Rubinstein, J.
Frozen ground settling, Ground thawing, Permafrost thermal properties, Freeze thaw cycles, Design, Construction materials, Cost analysis, Computer programs, Analysis (mathematics), Settlement (structural).

42-521
Design report—building freezing alarm systems.
Strandberg, J.S., *Alaska. Dept. of Transportation and Public Facilities. Report,* Aug. 1982, AK-RD-83-10, 31p. + appends., 5 refs.
Freezing, Warning systems, Monitors, Buildings, Freezing points, Design, Electric equipment, Cost analysis.

42-522
Maintenance monitoring for remote public facilities.
Tiedemann, J.B., et al, *Alaska. Dept. of Transportation and Public Facilities. Report,* Oct. 1981, AK-RD-82-11, 15p., 2 refs.
Jurick, R.W.
Monitors, Buildings, Freezing, Warning systems, Airports, Roads, Maintenance.

42-523
Corrosion of steel in calcium-magnesium-acetate (CMA) deicer.
Venkatesh, E.S., et al, *Alaska. Dept. of Transportation and Public Facilities. Report,* Jan. 1985, AK-RD-85-27, 29p., 16 refs.
Kutterer, S.
Chemical ice prevention, Corrosion, Steels, Road icing, Salting, Chemical composition, Temperature effects, Tests.

42-524
Behavior of plastic sand confinement grids.
Coetzee, N.F., *Alaska. Dept. of Transportation and Public Facilities. Report,* Jan. 1986, AK-RD-87-07, 33p., 13 refs.
Soil stabilization, Sands, Cellular plastics, Pavements, Frozen ground, Bearing strength, Soil aggregates, Elastic properties, Loads (forces), Stresses.

42-525
Second Spanish Symposium on Antarctic Studies, Madrid, July 13-15, 1987. Proceedings. [Actas del segundo Symposium Español de Estudios Antárticos, Madrid, 13 al 15 de julio de 1987],
Castellví, J., ed, Madrid, Consejo Superior de Investigaciones Cientificas, 1987, 447p., In Spanish with English summaries. Refs. passim. For individual papers see 42-526 through 42-528 or A-36390, B-36361, B-36363, B-36378 through B-36382, B-36384 through B-36388, E-36372, E-36375, E-36376, E-36383, F-36371, F-36392, G-36391, H-36389, I-36367 through I-36369, J-36356 through J-36360, J-36362, J-36364 through J-36366, L-36370, L-36373, L-36374 and M-36377.
Sea ice, Expeditions, Glacier ice, Icebergs, Subglacial drainage.
This is a collection of papers, presented at the 2nd symposium on Spanish antarctic activities, reporting results of investigations conducted in the Antarctic by Spanish scientists during Nov. 1986-Jan. 1987. The papers are representative of the wide variety of interests focusing on Antarctica: biological, oceanographic, geological, atmospheric, and geophysical, as well as political and economic.

42-526
***Antartic' 86* Expedition. Scientific results.** [Expedición *Antartic' 86.* Resultados cientificos],
Ballester, A., et al, Actas del segundo Symposium Español de Estudios Antárticos. (Spanish Symposium on Antarctic Studies, 2nd, Madrid, July 13-15, 1987. Proceedings.) Edited by J. Castellví, Madrid, Consejo Superior de Investigaciones Cientificas, 1987, p.1-20, 8 refs., In Spanish with English summary.
Rovira, J., Castellví, J., Julià, A.
Ice composition, Ice cover effect, Polar regions, Antarctica—South Shetland Islands.
The *Antarctic' 86* Spanish expedition (Nov. 23, 1986-Jan. 10, 1987) originated in the port of Vigo on board the R/V *Prof. Siedlecki.* Automatic-sequential (on line) analysis of temperature, salinity, nitrates, nitrites, silicates and chlorophyll was made, without any interruption, from Canary Is. to Admiralty Bay (South Shetland Is) on sea water sampled from -4 m depth. Results are presented in numerous charts and tables. It is suggested that the chemical composition of sea water particular to that area is influenced by such factors as the sea ice cover and the submerged volcanic rocks. (Auth. mod.)

42-527
Method for predicting subglacial drainage and its prospects with antarctic subpolar glaciers. [Método de predicción del drenaje subglaciar, sus perspectivas en los glaciares subpolares de la Antártida],
Braso, A., Actas del segundo Symposium Español de Estudios Antárticos. (Spanish Symposium on Antarctic Studies, 2nd, Madrid, July 13-15, 1987. Proceedings.) Edited by J. Castellví, Madrid, Consejo Superior de Investigaciones Cientificas, 1987, p.173-183, 13 refs., In Spanish with English summary.
Subglacial drainage, Karst, Polar regions.
Investigations carried out during Aug.-Sep. 1985 on Werenskiold Glacier, Svalbard, with the object of testing the prediction method of the principal directions of drainage in karst under arctic ice and evaluate the methods' applicability to antarctic ice, are reported. It is concluded that the method in question gives the directional probability of subglacial drainage with a degree of accuracy greater than 98% obtained in Kolmogorov's test, and that it is applicable to marine, subpolar glaciers, such as exist in great numbers on the periphery of Antarctica.

42-528
Resources potential of antarctic icebergs.
Wadhams, P., Actas del segundo Symposium Español de Estudios Antárticos. (Spanish Symposium on Antarctic Studies, 2nd, Madrid, July 13-15, 1987. Proceedings.) Edited by J. Castellví, Madrid, Consejo Superior de Investigaciones Cientificas, 1987, p.425-447, With Spanish summary. Refs. p.443-447.
Icebergs, Iceberg towing, Ice shelves, Drift.
The suggestion that antarctic tabular icebergs can be towed to Southern Hemisphere desert locations and used as a source of fresh water and electric power is discussed. The history of this idea is reviewed, as are the physical properties of icebergs which affect their potential for towing; the methods that would be used for detection, propulsion, protection and processing; and the ICETEC technique which would extract power as well as fresh water. It is concluded that the idea may be feasible, but that many problems remain to be solved. (Auth. mod.)

42-529
All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 1. [Tezisy dokladov, Chast' I],
Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986, Kiev, IPP AN USSR, 1986, 67p., In Russian. For selected summaries see 42-530 through 42-532.
Earthwork, Excavation, Equipment, Steel structures, Pipelines, Low temperature tests, Construction materials, Frost resistance, Brittleness.

42-530
Studying anisotropy of fracture resistance at low temperatures. [Issledovanie anizotropii treshchinostoĭkosti pri ponizhennykh temperaturakh],
D'iakov, M.M., et al, Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 1), Kiev, IPP AN USSR, 1986, p.40, In Russian.
Kamalov, V.Z., Andreĭkin, A.E.
Earthwork, Excavation, Equipment, Steel structures, Frost resistance, Construction materials, Low temperature tests.

42-531
Estimating strength of pipeline steels at low temperatures. [Otsenka prochnosti trubnykh staleĭ pri nizkikh temperaturakh],
Erofeev, V.V., et al, Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 1), Kiev, IPP AN USSR, 1986, p.42-43, In Russian.
Shakhmatov, M.V., Ostsemin, A.A.
Pipes (tubes), Steel structures, Joints (junctions), Welding, Brittleness.

42-532
Criteria of steel failure and resistance to fracturing in main pipelines, in the 77-293 K temperature range. [Kriterii razrusheniia i treshchinostoĭkost' staleĭ magistral'nykh truboprovodov v intervale temperatur 77-293 K],
Krasovskiĭ, A.IA., et al, Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 1), Kiev, IPP AN USSR, 1986, p.51, In Russian.
Pipes (tubes), Steel structures, Frost resistance, Brittleness.

42-533
All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2. [Tezisy dokladov, Chast' II],
Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986, Kiev, IPP AN USSR, 1986, 74p., In Russian. For selected summaries see 42-534 through 42-539.
Cold stress, Construction materials, Steels, Joints (junctions), Welding, Construction equipment, Cold weather performance, Frost action, Permafrost beneath structures, Tests, Fracturing, Mechanical properties, Laboratory techniques.

42-534
Deformation and strength of 12KH18N10T steel and its welded joints under combined stresses, at normal and low temperatures. [Deformirovanie i prochnost' stali 12KH18N10T i ee svarnykh soedinenii pri slozhnom napriazhennom sostoianii v usloviiakh normal'nykh i nizkikh temperatur],
Lamashevskiĭ, V.P., Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2), Kiev, IPP AN USSR, 1986, p.3-4, In Russian.
Pipes (tubes), Welding, Joints (junctions), Steels, Frost action, Mechanical properties.

42-535
Effect of cold climate on the bearing strength and service life of machines and structures. [O vliianii nizkikh klimaticheskikh temperatur na nesushchuiu sposobnost' i dolgovechnost' mashin i sooruzheniĭ],
Larionov, V.P., Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2), Kiev, IPP AN USSR, 1986, p.4-5, In Russian.
Frost resistance, Construction equipment, Construction materials, Frost action.

42-536
Mechanical properties of carbon-nickel steels at low temperatures. [Mekhanicheskie svoĭstva uglerodistykh nikelevykh staleĭ pri nizkikh temperaturakh],
Perkas, M.D., et al, Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2), Kiev, IPP AN USSR, 1986, p.29, In Russian.
Alekseeva, L.E., L'vov, IU.B., Maloletnev, A.IA.
Steels, Steel structures, Mechanical properties, Low temperature tests.

42-537
Increasing the resistance of T-joints to cold fracturing when welding in freezing weather. [Puti povysheniia soprotivliaemosti obrazovaniiu kholodnykh treshchin tavrovykh soedinenii pri svarke v zimnee vremia],
Savvinov, I.T., Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2), Kiev, IPP AN USSR, 1986, p.36, In Russian.
Steel structures, Welding, Joints (junctions), Cold stress, Fracturing.

42-538
Low-cycle endurance tests of materials and welded high-strength steel structures in cold climates. [Malotsiklovaia prochnost' materialov i elementov svarnykh konstruktsiĭ iz vysokoprochnykh staleĭ pri nizkikh klimaticheskikh temperaturakh],
Khanukhov, Kh.M., et al, Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2), Kiev, IPP AN USSR, 1986, p.52, In Russian.
Steel structures, Welding, Joints (junctions), Construction materials, Low temperature tests, Laboratory techniques.

42-539
Fatigue resistance of steel and welded joints, allowing for mining and transportation conditions in the Far North. [Soprotivlenie ustalosti staleĭ i ikh svarnykh soedinenii s uchetom usloviĭ ekspluatatsii gornodobyvaiushchef i transportnoĭ tekhniki v raĭonakh Kraĭnego Severa],
Shul'ginov, B.S., Vsesoiuznaia konferentsiia po prochnosti materialov i konstruktsiĭ pri nizkikh temperaturakh, 2nd, Zhitomir, Sep. 16-18, 1986. Tezisy dokladov, Chast' I (All-Union conference on the strength of materials and structures at low temperatures, 2nd, Zhitomir, Sep. 16-18, 1986. Summaries, Part 2), Kiev, IPP AN USSR, 1986, p.58, In Russian.
Steels, Brittleness, Equipment, Test equipment, Low temperature tests, Loads (forces), Steel structures, Periodic variations.

42-540
Estimating engineering-geological conditions for calculating roadbed stability in areas of clayey soils. [Ob otsenke inzhenerno-geologicheskikh usloviĭ v tseliakh proektirovaniia ustoĭchivosti zemlianogo polotna v raĭonakh rasprostraneniia glinistykh gruntov],
Dubnov, IU.D., et al, Sovershenstvovanie sredstv i metodov izyskaniĭ zheleznykh dorog (Improving the means and methods of research for railroad construction) edited by IU.D. Dubnov and M.A. Baranov, Moscow, Transport, 1986, p.28-37, In Russian.
Gorelik, A.M.
Roadbeds, Organic soils, Slope processes, Peat, Sliding, Clay soils, Ground water, Roads, Design, Deformation, Slope orientation.

42-541
Forecasting the danger of naled formation for engineering purposes. [Prognozirovanie nalednoĭ opasnosti dlia inzhenernykh tseleĭ],
Lugovoĭ, P.N., Sovershenstvovanie sredstv i metodov izyskaniĭ zheleznykh dorog (Improving the means and methods of research for railroad construction) edited by IU.D. Dubnov and M.A. Baranov, Moscow, Transport, 1986, p.72-78, In Russian. 5 refs.
Forecasting, Mathematical models, Naleds, Engineering geology, Formation.

42-542
Homogeneous formation of crystalline nuclei in strongly supercooled liquid. [Gomogennoe obrazovanie kristallicheskikh zarodysheĭ v sil'no pereokhlazhdennoĭ zhidkosti],
Ignat'ev, O.M., *Fizika tverdogo tela*, 1977, Vol.7, p.49-52, In Russian. 3 refs.
Supercooling, Frozen liquids, Homogeneous nucleation, Crystal growth, Mathematical models.

42-543
Ways of accelerating the working process of a snowplow. [Puti intensifikatsii rabochego protsessa pluzhnogo snegoochistiteliia],
Rudnev, V.K., et al, *Gornye, stroitel'nye, dorozhnye i meliorativnye mashiny*, 1986, Vol.39, p.18-23, In Russian.
Bondarev, P.V.
Snow removal, Road maintenance, Construction, Taiga, Snow depth, Roads.

42-544
Ice-forming activity of organic crystalline hydrates. [L'doobrazuiushchaia aktivnost' organicheskikh kristallogidratov],
Chesha, I.I., et al, *Fizika aerodispersnykh sistem*, 1982, Vol.24 34-37, In Russian. 5 refs.
Cloud physics, Organic nuclei, Ice nuclei, Cloud seeding, Weather modification.

42-545
Calculating the size of critical nucleus in supercooled water aerosols. [Raschet velichiny kriticheskogo zarodysha v pereokhlazhdennykh vodnykh aerozoliakh],
D'iachenko, A.M., *Fizika aerodispersnykh sistem*, 1984, Vol.26, p.24-28, In Russian. 3 refs.
Nucleation, Crystal growth, Interfaces, Supercooling, Water, Aerosols.

42-546
Studying the effect of surface active substances on temperature threshold of water crystallization. [Issledovanie vliianiia poverkhnostno-aktivnykh veshchestv (PAV) na temperaturnyĭ porog kristallizatsii vody],
Chesha, I.I., et al, *Fizika aerodispersnykh sistem*, 1985, Vol.27, p.14-20, In Russian.
Kolomiets, K.A., Kharchenko, E.V.
Surfactants, Ice formation, Nucleation, Cold chambers, Ice nuclei, Crystal growth, Water, Aerosols, Admixtures.

42-547
Reliability of existing estimates of frozen soil compressibility at thawing. [O dostovernosti sushchestvuiushchikh otsenok szhimaemosti mnogoletnemerzlykh gruntov pri ottaivanii],
Khrustalev, L.N., et al, *Inzhenernaia geologiia*, July-Aug. 1987, No.4, p.86-90, In Russian. 6 refs.
Vodolazkin, V.M.
Permafrost physics, Active layer, Compressive properties, Foundations, Permafrost beneath structures.

42-548
Mathematical models of the reliability of power line structures. [Matematicheskie modeli nadezhnosti konstruktsiĭ vozdushnykh liniĭ elektroperedachi],
Kinash, B.M., *Elektricheskie seti i sistemy*, 1986, Vol.22, p.89-95, In Russian. 2 refs.
Power line icing, Ice loads, Wind velocity, Mathematical models.

42-549
Analyzing the performance regimes of NTMI-10-66 voltage transformers during direct-current melting of ice. [Analiz rezhimov raboty transformatorov napriazheniia tipa NTMI-10-66 pri plavke gololeda postoiannym tokom],
Zhuk, IU.V., *Elektricheskie seti i sistemy*, 1986, Vol.22, p.116-119, In Russian. 3 refs.
Power line icing, Ice prevention, Electric heating.

42-550
New method for calculating frost heave including solute effects.
Cary, J.W., *Water resources research*, Aug. 1987, 23(8), p.1620-1624, 17 refs.
Frost heave, Soil water migration, Heat transfer, Soil freezing, Water chemistry, Soil temperature, Heat flux, Measurement, Surface temperature, Ice lenses.

42-551
Coupled thermomechanical response of an axisymmetric cold ice sheet.
Hutter, K., et al, *Water resources research*, July 1987, 23(7), p.1327-1339, 21 refs.
Yakowitz, S., Szidarovszky, F.
Ice sheets, Thermodynamic properties, Ice models, Mathematical models, Surface temperature, Ice temperature, Ice mechanics, Stresses, Temperature distribution.

42-552
Variation of the activity of ice nuclei upon exposure to ammonium ion and iodine.
Reischel, M.T., *Tellus*, Sep. 1987, 39B(4), p.363-373, 48 refs.
Ice nuclei, Ions, Water vapor, Liquid phases, Thermodynamics, Chemical analysis, Experimentation.

42-553
Chemically resolved submicrometric size distribution and external mixing of the Arctic haze aerosols.
Heintzenberg, J., et al, *Tellus*, Sep. 1987, 39B(4), p.374-382, 20 refs.
Covert, D.S.
Aerosols, Haze, Particle size distribution, Hygroscopicity, Light scattering, Mass transfer, Microstructure.

42-554
Statistics of ice thickness, Queen Elizabeth Islands, NWT: 1978 seismic data.
Wetzel, V.F., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Jan. 1981, APOA No.174-1V2, 126p.
Ice cover thickness, Seismic surveys, Statistical analysis, Canada—Northwest Territories—Queen Elizabeth Islands.

42-555
Ice thickness profiles from seismic record: 1978 data.
Wetzel, V.F., *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Jan. 1981, APOA No.174-1V3, 24p. + tbls.
Ice cover thickness, Seismic surveys, Profiles, Accuracy, Computer applications.

42-556
Deflection testing and its application to pavement rehabilitation in Alaska.
McHattie, R.L., *Alaska. Dept. of Transportation and Public Facilities. Report*, Jan. 1985, FHWA-AK-RD-85-15, 42p. + appends., 17 refs.
Pavements, Flexural strength, Loads (forces), Roads, Bearing strength, Deformation, Design, United States—Alaska.

42-557
Thermal erosion of cut slopes in ice-rich soil.
Mageau, D.W., et al, *Alaska. Dept. of Transportation and Public Facilities. Report*, Apr. 1984, FHWA-AK-RD-85-02, 54p. + appends., 22 refs.
Rooney, J.W.
Erosion, Slope stability, Permafrost thermal properties, Ground ice, Settlement (structural), Rheology, Shear strength, Ground thawing, Tests.

42-558
Pavement problems in Alaska versus asphalt gradings.
Henry, J.W., *Alaska. Dept. of Transportation and Public Facilities. Report,* June 1981, FHWA-AK-RD-82-8, 30p., 4 refs.
Pavements, Bitumens, Construction materials, Bearing strength, Viscosity, Aggregates, Cement admixtures, Compaction, United States—Alaska.

42-559
Permafrost prethawing by surface modification; final report.
Esch, D.C., *Alaska. Dept. of Transportation and Public Facilities. Report,* Dec. 1982, FHWA-AK-RD-83-23, 40p. + append., 16 refs.
Ground thawing, Embankments, Settlement (structural), Permafrost physics, Solar radiation, Surface properties, Vegetation factors, Temperature effects, Wind velocity, Thaw depth.

42-560
Antarctic cornucopia.
Campbell, P., *Nature,* Oct. 1, 1987, 329(6138), p.387.
Research projects, Ice cores, Climate, Antarctica—Vostok Station.
Remarks are made on the benefits to be derived from collaboration between nations in antarctic research. The example is cited of the important climatic results obtained from the French-Soviet drilling project conducted at Vostok Station between 1980-1985.

42-561
Ice core links CO2 to climate.
Sundquist, E.T., *Nature,* Oct. 1, 1987, 329(6138), p.389-390, 10 refs.
Research projects, Ice cores, Climate, Antarctica—Vostok Station.
Results of CO2 data obtained during a joint French-Soviet ice core drilling project at Vostok Station as an indicator of climate change are reviewed and commented on. The 2083 m continuous core was obtained during the years 1980-1985 and contained measurements of O-18 and deuterium throughout its length. It is concluded that the global climate system and carbon cycle are intensely interactive.

42-562
Vostok ice core: a continuous isotope temperature record over the last climatic cycle (160,000 years).
Jouzel, J., et al, *Nature,* Oct. 1, 1987, 329(6138), p.403-408, 50 refs.
Ice cores, Climatic changes, Isotopes, Ice composition, Antarctica—Vostok Station.
In the context of scarce documentation of historical continental climates, the 2,083-m ice core recovered by the Soviet Antarctic Expeditions at Vostok is of fundamental importance because it fully covers the last glacial-interglacial cycle, back to the ice age that preceded the last interglacial (160 kyr BP) and has been essentially undisturbed by flow conditions. It allows access to many climatic and climate-related parameters. Presented here are continuous data for deuterium throughout the core. The focus first is on the interpretation of this profile in terms of temperature and then this continuous record is examined in the frequency and time domains. The ice record is compared with the oceanic record, with a special emphasis on the last Interglacial Period. For the first time an ice core reveals the large 100-kyr glacial-interglacial cycle and concentration of variance near the Earth's orbit tilt and precession frequencies. (Auth.)

42-563
Vostok ice core provides 160,000-year record of atmospheric CO2.
Barnola, J.M., et al, *Nature,* Oct. 1, 1987, 329(6138), p.408-414, 43 refs.
Raynaud, D., Korotkevich, E.S., Lorius, C.
Ice cores, Climatic changes, Carbon dioxide, Atmospheric composition, Antarctica—Vostok Station.
Direct evidence of past atmospheric CO2 changes has been extended to the past 160,000 years from the Vostok ice core. These changes are most notably an inherent phenomenon of change between glacial and interglacial periods. Besides the major 100,000-year cycle, the CO2 record seems to exhibit a cyclic change with a period of some 21,000 years. (Auth.)

42-564
Vostok ice core: climatic response to CO2 and orbital forcing changes over the last climatic cycle.
Genthon, C., et al, *Nature,* Oct. 1, 1987, 329(6138), p.414-418, 55 refs.
Ice cores, Climatic changes, Atmospheric composition, Carbon dioxide, Antarctica—Vostok Station.
Vostok climate and CO2 records suggest that CO2 changes have had an important climatic role during the late Pleistocene in amplifying the relatively weak orbital forcing. The existence of the 100-kyr cycle and the synchronism between Northern and Southern Hemisphere climates may have their origin in the large glacial-interglacial CO2 changes. (Auth.)

42-565
Tensile reinforcement of road embankments on polygonal ground by geotextiles or related materials: interim report.
Kinney, T.C., *Alaska. Dept. of Transportation and Public Facilities. Report,* Mar. 1986, FHWA-AK-RD-86-29, 25p., 5 refs.
Embankments, Tensile properties, Polygonal topography, Construction materials, Roads, Computer programs, Tests, Design criteria, Patterned ground, Ice wedges.

42-566
Effects of salts on road embankment stability under freezing and thawing conditions: final report.
Kinney, T.C., et al, *Alaska. Dept. of Transportation and Public Facilities. Report,* Dec. 1986, FHWA-AK-RD-87-09, 34p.
Reckard, M.
Frost heave, Embankments, Freeze thaw cycles, Soil stabilization, Salting, Roads, Tests, Temperature effects, Thaw weakening.

42-567
Air cushion vehicles: any potential for Canada?.
Laframboise, J.E., *Canadian aeronautics and space journal,* Sep. 1987, 33(3), p.155-157.
Ice navigation, Air cushion vehicles, Icebreakers, Design, Bearing strength, Transportation, Canada.

42-568
Tactical bridging during winter: 1986 Korean bridging exercise.
Coutermarsh, B.A., *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1987, SR 87-13, 23p., ADB-114 800, 11 refs.
Ice cutting, River crossings, Ice blasting, Military operation, Bridges, Explosives, Ice control, Winter.
Deployment alternatives for the U.S. Ribbon bridge are discussed assuming an ice sheet is present at the crossing site. Ice blasting time and effectiveness with several explosives readily available to the Army are presented. A 1986 Korean winter bridging exercise is detailed where an ice sheet was blasted using C4 explosives in a grid pattern. Ice rubble consolidation was attempted using the Bridge Erection Boat, after which the launch of a bridge bay section was tried. It is shown that ice rubble hinders boat operations and retrieval of the bay sections.

42-569
Oxygen conditions in two prairie pothole lakes during winter ice cover.
Baird, D.J., et al, *Canadian journal of fisheries and aquatic sciences,* May 1987, 44(5), p.1092-1095, With French summary. 12 refs.
Gates, T.E., Davies, R.W.
Lake water, Oxygen, Lake ice, Ice cover effect, Seasonal variations, Ice conditions, Canada—Alberta—Calgary.

42-570
Characteristic spectral signatures of Arctic noise-generating mechanisms.
Oard, V.T., Monterey, CA, Naval Postgraduate School, June 1987, 174p., M.S. thesis. Refs. p.161-167.
Sound waves, Noise (sound), Ice cracks, Snow ice interface, Spectra, Cracking (fracturing), Wind factors, Particle size distribution, Pressure ridges, Seismology.

42-571
Field research on Axel Heiberg Island, N.W.T., Canada.
Adams, P., ed, Schefferville, P.Q., McGill University, Centre for Northern Studies and Research, 1987, 207p., Refs. passim. For selected papers see 42-572 through 42-574.
Glaciology, Bibliographies, Permafrost, Hydrology, Meteorology, Lake water, Canada—Northwest Territories—Axel Heiberg Island.

42-572
Axel Heiberg Island bibliography.
Ommanney, C.S.L., Field research on Axel Heiberg Island, N.W.T., Canada. Edited by P. Adams, Schefferville, P.Q., McGill University, Centre for Northern Studies and Research, 1987, p.5-55.
Glaciology, Permafrost, Bibliographies, Meteorology, Canada—Northwest Territories—Axel Heiberg Island.

42-573
Colour Lake, Axel Heiberg Island, N.W.T., a naturally acid, High Arctic, lake—data report.
Allan, C., et al, Field research on Axel Heiberg Island, N.W.T., Canada. Edited by P. Adams, Schefferville, P.Q., McGill University, Centre for Northern Studies and Research, 1987, p.67-189, Refs. passim.
Lake water, Water chemistry, Lake ice, Hydrology, Ice conditions, Temperature distribution, Statistical analysis, Canada—Northwest Territories—Colour Lake.

42-574
Ground temperature data collected for northern Canada.
Young, S., et al, Field research on Axel Heiberg Island, N.W.T., Canada. Edited by P. Adams, Schefferville, P.Q., McGill University, Centre for Northern Studies and Research, 1987, p.195-207, 8 refs.
Judge, A.
Permafrost thermal properties, Soil temperature, Permafrost thickness, Permafrost distribution, Surface temperature, Air temperature, Mapping, Canada—Northwest Territories.

42-575
Effect of partial and clearcutting on streamflow at Deadhorse Creek, Colorado.
Troendle, C.A., et al, *Journal of hydrology,* Mar. 15, 1987, 90(1-2), p.145-157, 18 refs.
King, R.M.
Water retention, Snow retention, Snow water equivalent, Forestry.

42-576
Icing and de-icing on a downscale model in ONERA S1MA wind tunnel.
Guffond, D., et al, *Recherche aérospatiale,* 1987, No.2, p.23-32, English edition. 6 refs.
Cassaing, J., Drevet, J.P.
Aircraft icing, Helicopters, Propellers, Laboratory techniques.

42-577
Global distribution and migration of subsurface ice on Mars.
Fanale, F.P., et al, *Icarus,* July 1986, 67(1), p.1-18, 36 refs.
Salvail, J.R., Zent, A.P., Postawko, S.E.
Extraterrestrial ice, Mars (planet), Ground ice.

42-578
Distribution and state of H2O in the high-latitude shallow subsurface of Mars.
Zent, A.P., et al, *Icarus,* July 1986, 67(1), p.19-36, 38 refs.
Fanale, F.P., Salvail, J.R., Postawko, S.E.
Extraterrestrial ice, Mars (planet), Soil water migration.

42-579
Mars: a water-rich planet?.
Carr, M.H., *Icarus,* Nov. 1986, 68(2), p.187-216, Refs. p.213-216.
Extraterrestrial ice, Mars (planet), Ground ice.

42-580
Early thermal profiles and lithospheric strength of Ganymede from extensional tectonic features.
Golombek, M.P., et al, *Icarus,* Nov. 1986, 68(2), p.252-265, 47 refs.
Banerdt, W.B.
Extraterrestrial ice, Ground ice.

42-581
Thermal segregation of water ice on the Galilean satellites.
Spencer, J.R., *Icarus,* Feb. 1987, 69(2), p.297-313, 49 refs.
Extraterrestrial ice, Ground ice.

42-582
Statistics of ice thickness, Queen Elizabeth Islands, NWT: 1979 seismic data.
Wetzel, V., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Jan. 1981, APOA No.174-1V4, 148p.
Ice conditions, Ice cover thickness, Sea ice, Seismic surveys, Statistical analysis, Canada—Northwest Territories—Queen Elizabeth Islands.

42-583
Ice thickness profiles from seismic record: 1979 data.
Wetzel, V., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Jan. 1981, APOA No.174-1V5, 24p. + tables.
Ice cover thickness, Sea ice, Seismic surveys, Ice conditions, Profiles, Computer applications, Winter, Accuracy, Canada—Northwest Territories—Queen Elizabeth Islands.

42-584
Statistics of ice thickness, Queen Elizabeth Islands, NWT: 1980 seismic data.
Wetzel, V., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Jan. 1981, APOA No.174-1V6, 82p.
Seismic surveys, Ice cover thickness, Sea ice, Ice conditions, Statistical analysis, Canada—Northwest Territories—Queen Elizabeth Islands.

42-585
1980/81 ice rubble model tests.
Wards, R.D., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* July 1984, APOA No.177-1, 169p. + appends.
Ice cover thickness, Ice models, Pressure ridges, Ice pileup, Photography.

42-586
Icing of flow conditioners in a closed-loop tunnel.
Newton, J.E., *U.S. National Aeronautics and Space Administration. Technical memorandum,* June 1987, NASA-TM-89824, 11p., N87-23591, M.S. thesis. 4 refs.
Icing, Wind tunnels, Flow rate, Heat transfer, Spray freezing, Ice formation, Hoarfrost, Temperature effects.

42-587
Sensitivity studies with a mass balance model including temperature profile calculations inside the glacier.
Greuell, W., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.101-124, With German summary. 25 refs.
Oerlemans, J.
Glacier mass balance, Glacier heat balance, Ice models, Glacier ablation, Mountain glaciers, Phase transformations, Temperature effects, Ice temperature, Computer applications.

42-588
Correlation between selected climatic elements and the mass balance of Alpine and Scandinavian glaciers. [Die korrelation verschiedener Klimaelemente mit dem Massenhaushalt alpiner und skandinavischer Gletscher],
Günther, R., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.125-147, In German with English summary. 33 refs.
Widlewski, D.
Glacier mass balance, Climatic factors, Seasonal variations, Humidity, Mountain glaciers.

42-589
Upper limit of glaciers, surface temperature and glaciation of the slopes of Himalaya Mountains at 5,000-8,800 m. [Die Obergrenze der Gletscherhöhenstufe—Oberflächentemperaturen und Vergletscherung der Himalayaflanken von 5000-8800 m],
Kuhle, M., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.149-162, In German with English summary. 18 refs.
Glacier surfaces, Mountain glaciers, Glaciation, Snow accumulation, Slopes, Surface temperature, Metamorphism (snow), Altitude, Himalaya Mountains.

42-590
Explanatory remarks on maps of Gurgler Ferner, 1981. [Begleitworte zur Karte des Gurgler Ferners 1981],
Patzelt, G., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.163-170, In German with English summary. 9 refs.
Glacier mass balance, Ice volume, Ice cover thickness, Mountain glaciers, Altitude, Austria—Gurgler Ferner.

42-591
Reflections on the Late Würm glaciation of the Höllengebirge, northern Calcareous Alps/Upper Austria. [Überlegungen zur spätglazialen Vergletscherung des Höllengebirges, Nördliche Kalkalpen/Oberösterreich],
Dollinger, F., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.171-184, In German with English summary. 30 refs.
Glaciation, Snow line, Glacier oscillation, Paleoclimatology, Moraines, Altitude, Mountain glaciers, Austria—Alps.

42-592
Follow-up measurements in the Pasterze area (Glockner Group) in 1985. [Nachmessungen im Bereich der Pasterze (Glocknergruppe) im Jahre 1985],
Wakonigg, H., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.185-190, In German.
Glacier mass balance, Snow cover distribution, Cloud cover, Wind factors.

42-593
Glaciers of the Austrian Alps, 1984/85. Integrated report on glacier measurements of the Austrian Alpine Society in 1985. [Die Gletscher der Österreichischen Alpen 1984/85. Sammelbericht über die Gletschermessungen des Österreichischen Alpenvereins im Jahre 1985],
Patzelt, G., *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1986, 22(2), p.191-205, In German.
Glacier surveys, Glacier flow, Snow accumulation, Austria—Alps.

42-594
Glacial deformation environment in the subsiding zone with special reference to the Kleszczów tectonic graben.
Brodzikowski, K., *Quaternary studies in Poland,* 1985, No.6, p.5-22, Refs. p.20-22.
Glacial geology, Sediments, Tectonics, Periglacial processes, Quaternary deposits.

42-595
Pleistocene glaciogenic sediments of the watermorinic facies.
Morawski, W., *Quaternary studies in Poland,* 1985, No.6, p.99-116, Refs. p.113-116.
Glacial deposits, Pleistocene, Sediments, Soil structure, Quaternary deposits, Moraines.

42-596
Steady wave-drift of modeled ice floes.
Harms, V.W., *Journal of waterway, port, coastal and ocean engineering,* Nov. 1987, 113(6), p.606-622, 13 refs.
Ice floes, Drift, Ocean waves, Ice mechanics, Ice models, Analysis (mathematics), Tests.

42-597
Mobile Bjerrum defects: a criterion for ice-like crystal growth.
Wooldridge, P.J., et al, *Journal of chemical physics,* Oct. 1, 1987, 87(7), p.4126-4131, 28 refs.
Richardson, H.H., Devlin, J.P.
Ice crystal growth, Low temperature tests, Phase transformations, Molecular structure, Hydrogen bonds, Defects, Clathrates, Solutions, Spectra.

42-598
Water management bulletin, No.1. [Biulleten' po vodnomu khoziaĭstvu, No.1],
Soveshchanie rukovoditeleĭ vodokhozĭaĭstvennykh organov stran-chlenov SEV, Moscow, Council for Natural Economic Assistance, 1986, 85p., In Russian. For selected paper see 42-599.
Kabanov, V.I., ed, Mrost, A.IU., ed.
Ice jams, Icebound rivers, Ice breakup, Ice floes, Ice forecasting.

42-599
Ice breakup on the rivers of Poland. [Razrushenie l'da na rekakh PNR],
Borovski, K., *Biulleten' po vodnomu khoziaĭstvu,* 1986, No.1, p.26-28, In Russian.
Icebound rivers, River ice, Ice breakup, Ice floes, Ice jams, Ice forecasting.

42-600
Artificial upbuilding of ice on small rivers. [Iskusstvennoe namorazhivanie na malykh rekakh],
Achapitov, V.N., *Avtomobil'nye dorogi,* Sep. 1986, No.9, p.26, In Russian.
Ice roads, Snow roads, Artificial ice, Ice crossings, Icebound rivers, Ice cover thickness, Bearing strength.

42-601
Roadbed construction in freezing weather. [Vozvedenie zemlianogo polotna zimoĭ],
Migliachenko, V.P., *Avtomobil'nye dorogi,* Aug. 1986, No.11, p.12-13, In Russian.
Roadbeds, Permafrost beneath structures, Earthwork, Artificial thawing, Frost protection.

42-602
New surfactants for increasing water- and frost-resistance of bituminous concretes. [Novye PAV dlia povysheniia vodo- i morozostoĭkosti asfal'tobetona],
Shemonaeva, D.S., et al, *Avtomobil'nye dorogi,* Aug. 1986, No.11, p.18-19, In Russian. 2 refs.
Gokhman, L.M., Pankov, D.M., Latysheva, L.M.
Concrete pavements, Bituminous concretes, Concrete admixtures, Concrete strength, Frost resistance, Roads, Waterproofing, Construction materials.

42-603
Bituminous concrete pavements with anti-icing properties. [Asfal'tobetonnoe pokrytie s protivogololednymi svoĭstvami],
Korolev, I.V., et al, *Avtomobil'nye dorogi,* Jan. 1987, No.1, p.15-16, In Russian. 3 refs.
Kasymov, A.K., Il'in, A.S., Tolpinskiĭ, S.A.
Road icing, Pavements, Bituminous concretes, Concrete admixtures, Ice prevention.

42-604
Ways of lowering energy consumption of frozen ground excavation. [Puti snizheniia energoemkosti razrabotki merzlykh gruntov],
Migliachenko, V.P., *Avtomobil'nye dorogi,* Mar. 1987, No.3, p.21, In Russian.
Frost protection, Construction equipment, Cold weather construction, Earthwork, Hydraulic structures, Roads, Frozen ground, Excavation.

42-605
Crack formation in pileworks during winter concreting. [Obrazovanie treshchin v svaĭnykh rostverkakh pri zimnem betonirovanii],
Kosterin, E.V., *Beton i zhelezobeton,* Sep. 1986, No.9, p.27-29, In Russian. 3 refs.
Winter concreting, Piles, Concrete structures, Concrete freezing, Frost action.

42-606
Dynamics of the thermo-stressed state of structures during winter concreting. [Dinamika termonapriazhennogo sostoianiia konstruktsiĭ pri zimnem betonirovanii],
Krasnovskiĭ, B.M., *Beton i zhelezobeton,* Dec. 1986, No.12, p.18-20, In Russian.
Concrete structures, Winter concreting, Concrete freezing, Cooling rate, Thermal stresses, Mathematical models.

42-607
Critical strength of concretes at the moment of freezing. [Kriticheskaia prochnost' betonov k momemtu zamorazhivaniia],
Krylov, B.A., et al, *Beton i zhelezobeton,* Apr. 1987, No.4, p.27-28, In Russian. 3 refs.
Eroshkin, V.N.
Winter concreting, Concrete curing, Concrete freezing, Concrete strength, Building codes, Concrete aggregates, Tests.

42-608
Improving the compensation factor for controlling frost resistance of concrete. [Sovershenstvovanie kompensatsionnogo faktora pri kontrole morozostoĭkosti betona],
Krasnyĭ, I.M., *Beton i zhelezobeton,* Feb. 1987, No.2, p.36-37, In Russian. 5 refs.
Capillary ice, Concrete freezing, Prefabrication, Air entrainment, Frost resistance, Concrete admixtures, Porous materials, Saturation, Ice formation, Ice pressure.

42-609
Frost resistance of pavement concretes with S-3 admixture at lowered content of cement. [Morozostoĭkost' dorozhnykh betonov s dobavkoĭ S-3 pri snizhennom soderzhanii tsementa],
Shelnin, A.M., et al, *Beton i zhelezobeton,* Jan. 1987, No.1, p.24-26, In Russian. 4 refs.
IAkobson, M.IA.
Pavements, Concrete freezing, Concrete admixtures, Frost resistance, Cements, Roads.

42-610
Radar backscattering by large, spongy ice oblate spheroids.
Longtin, D.R., et al, *Journal of atmospheric and oceanic technology,* Sep. 1987, 4(3), p.355-358, 21 refs.
Bohren, C.F., Battan, L.J.
Radar echoes, Backscattering, Ice structure.

42-611
Pressurized icing tunnel for graupel, hail and secondary raindrop production.
List, R., et al, *Journal of atmospheric and oceanic technology,* Sep. 1987, 4(3), p.454-463, 32 refs.
Lesins, G.B., García-García, F., McDonald, D.B.
Wind tunnels, Snow pellets, Artificial hailstones, Laboratories, Raindrops.

42-612
Zero Base II analysis.
Day, C.F., et al, *RMC Research Corporation. Report,* June 1973, UR-213, 62 leaves, variously paged.
Sweeney, R., Towles, W.T.
Ice runways, Logistics, Research projects, Cargo, Cold weather construction, Antarctica.
This report presents the results of Task M under contract NSF-C681. It assesses the impact that an ice runway located near the Dufek Massif would have on antarctic support operations. The analysis has been completed in two stages. The first, or

core analysis, examines the alternative uses of the Dufek ice runway to support the proposed Dufek Drilling Project and Pole and Siple Station resupply. The second stage of the analysis takes into account the other antarctic research programs and so assesses attractive alternatives identified in the core analysis in the context of overall antarctic operations. The core analysis examines some 22 alternative uses of the Dufek ice runway ranging from the major base for supporting Pole and Siple to an LC-130 base for supporting only the drilling project. The results of the analysis and the utility of the planning model are discussed. Details of the methods used, cost and planning factors applied, and the basic calculations are contained in 3 appendixes: Appendix A includes the core analysis, Appendix B defines the support requirements for the Dufek ice runway itself, and Appendix C completes the second stage or overall program analysis. (Auth.)

42-613
Ice forces on Hans Island.
Danielewicz, B.W., et al, *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Mar. 1981, APOA No.180-2, 59p. + appends., 10 refs.
Metge, M.
Ice pressure, Offshore landforms, Ice solid interface, Ice loads, Sea ice, Ice floes, Ice cracks.

42-614
Preliminary assessment of seismic sources and seismicity of the Canadian Beaufort Sea and preliminary evaluation of potential behavior of sand islands during earthquakes.
Woodward-Clyde Consultants, *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Nov. 1980, APOA No.179-1, 65p., 21 refs.
Artificial islands, Earthquakes, Sands, Seismic surveys, Offshore structures, Beaufort Sea.

42-615
Model experiments of ice forces associated with ridge building.
Abdelnour, R., et al, *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Jan. 8, 1982, APOA No.178-1, var.p., 22 refs.
Daly, M., Steele, M.
Ice override, Ice pressure, Pressure ridges, Offshore structures, Ice solid interface, Ice loads, Impact strength, Ice mechanics, Mathematical models, Artificial islands.

42-616
Stresses in icebergs—will the pressuremeter work.
Shields, D.H., et al, Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering, C-CORE publication, No.86-27, [1986], 16p., Presented at the 39th Canadian Geotechnical Society Conference, Montreal, P.Q., August 1986. 10 refs.
Ladanyi, B., Murat, J.R., Clark, J.I.
Iceberg towing, Ice pressure, Ice mechanics, Offshore structures, Drift, Stresses, Measuring instruments.

42-617
Local concrete-steel bond behavior at low temperature.
Shih, T.S., et al, *Journal of structural engineering,* Nov. 1987, 113(11), p.2278-2289, 7 refs.
Lee, G.C., Chang, K.C.
Reinforced concretes, Low temperature tests, Concrete strength, Stresses, Temperature variations, Steels, Adhesion, Loads (forces), Compressive properties.

42-618
Anisotropic power-law viscosity: a theoretical calculation relevant for some polar ices. [Viscosité selon une loi puissance anisotrope: calcul théorique approprié à certaines glaces polaires],
Lliboutry, L., *Académie des sciences, Paris. Comptes rendus hebdomadaires des séances. Série 2,* Nov. 28, 1983, 297(11), p.787-790, In French with English summary. 13 refs.
Ice creep, Viscosity, Grain size, Rheology, Ice physics.

42-619
Arctic ambient noise in the Beaufort Sea: seasonal space and time scales.
Lewis, J.K., et al, *Acoustical Society of America. Journal,* Sep. 1987, 82(3), p.988-997, 9 refs.
Denner, W.W.
Noise (sound), Underwater acoustics, Subglacial observations.

42-620
Acoustic properties of ice edge noise in the Greenland Sea.
Yang, T.C., et al, *Acoustical Society of America. Journal,* Sep. 1987, 82(3), p.1034-1038, 9 refs.
Giellis, G.R., Votaw, C.W., Diachok, O.I.
Noise (sound), Underwater acoustics, Ice edge.

42-621
Marine transportation and research in Alaska's ice-infested waters.
Sweet, L., et al, *Northern engineer,* 1985, 17(4), p.14-20, 7 refs.
Voelker, R., Seibold, F.
Ice navigation, Ice reporting, Ships, Remote sensing.

42-622
Report on the Third Chinese Conference on Permafrost: China expands research on frozen ground.
Péwé, T.L., *Northern engineer,* 1986, 18(2-3), p.4-8, 9 refs.
Permafrost, Meetings, China.

42-623
Northwest Territories, Canada: buried water and sewer service connections in permafrost areas.
Cheema, S., *Northern engineer,* 1986, 18(2-3), p.18-21.
Water pipelines, Sewage disposal.

42-624
Subarctic Alaska: design improvements for mine access roads.
Johansen, N.I., et al, *Northern engineer,* 1986, 18(2-3), p.46-50, 8 refs.
Lozano, N.
Roadbeds, Drains, Culverts, Monitors.

42-625
Thule Air Base, Greenland: foundations on permafrost.
Mangus, A.R., *Northern engineer,* 1986, 18(2-3), p.51-57, 4 refs.
Foundations, Permafrost preservation, Piles, Gravel, Ventilation.

42-626
Facies model for temperate continental glaciers.
Ashley, G.M., *Journal of geological education,* Sep. 1987, 35(4), p.208-216, 39 refs.
Glacial deposits, Pleistocene, Quaternary deposits.

42-627
Tugs, push-boats and barges for Siberia. [Buksiry, tolkachi i barzhi dlia Sibiri],
Grinbaum, A.F., et al, *Sudostroenie,* Sep. 1987, No.9, p.6-10, In Russian. 3 refs.
Lobastov, V.P., Sergeev, I.V.
Ports, Ships, Ice navigation, Design.

42-628
Ice protection of the rudder-propeller system of a harbor tug. [Protivoledovaia zashchita vintorulevogo kompleksa portovogo buksira],
Krapivin, K.K., *Sudostroenie,* Sep. 1987, No.9, p.16-17, In Russian.
Ports, Ships, Ice navigation, Propellers, Ice pressure, Ice floes, Impact.

42-629
Efficient working tools for ramming down foundation pits and frozen ground excavation. [Effektivnye rabochie organy dlia vytrambovyvaniia kotlovanov i rykhleniia merzlykh gruntov],
Sokolenko, L.A., *Mekhanizatsiia stroitel'stva,* Aug. 1987, No.8, p.16-17, In Russian. 3 refs.
Earthwork, Foundations, Soil compaction, Frozen ground.

42-630
Machines, equipment, instruments. [Mashiny, oborudovanie, instrument],
Volkova, A.E., *Mekhanizatsiia stroitel'stva,* Aug. 1987, No.8, p.24-27, In Russian.
Construction equipment, Cranes (hoists), Drills, Snow removal, Earthwork, Concrete placing, Cold weather construction.

42-631
Air cushion platforms. [Platformy na vozdushnoĭ podushke],
Panteleev, M., et al, *Morskoĭ flot,* 1987, No.9, p.44-46, In Russian.
Khmurin, V.
Ports, Air cushion vehicles, Amphibious vehicles, Marine transportation.

42-632
Transferrable and self-propelled equipment used in northern mine shafts. [Perenosnoe i samokhodnoe oborudovanie ekspluatiruemoe na shakhtakh Severa],
Kivileva, N.M., et al, *Bezopasnost' truda v promyshlennosti,* Feb. 1987, No.2, p.36, In Russian.
Sherstov, V.A.
Placer mining, Mine shafts, Roofs, Supports, Drills, Boreholes, Blasting, Continuous permafrost.

42-633
Standards for designing underground storages for oil, petroleum products and liquefied gases. [O normakh proektirovaniia podzemnykh khranilishch nefti, nefteproduktov i szhizhennykh gazov],
Sessin, I.V., et al, *Biulleten' stroitel'noĭ tekhniki,* Jan. 1987, No.1, p.13-14, In Russian.
Bovbel', V.P.
Underground storage, Artificial freezing, Petroleum products, Permafrost control, Liquefied gases, Crude oil, Building codes, Permafrost beneath structures.

42-634
Washout of frozen ground. [Razmyvaemost' merzlykh gruntov],
Taypin, V.Sh., et al, *Transportnoe stroitel'stvo,* Sep. 1987, No.9, p.6, In Russian. 4 refs.
IUrovskiĭ, B.L.
Roads, Permafrost thermal properties, Bridges, Frozen fines, Permafrost beneath structures, Water erosion, Thermal effects.

42-635
Investigation of the interannual variability of water and ice circulation of the Arctic Basin using a diagnostic model.
Beliakov, L.N., et al, *Problems of the Arctic and the Antarctic. Collection of articles,* 1986, Vol.58, p.54-66, For Russian original see 38-4065. 21 refs.
Volkov, V.A., Gazova, L.A., Ponomarev, V.I.
Sea ice distribution, Drift, Atmospheric circulation, Boundary layer, Wind velocity, Wind direction.

42-636
Vertical distribution of wind velocity and direction in the boundary laye. of the atmosphere over the Arctic Basin.
Tsigel'nitskiĭ, I.I., *Problems of the Arctic and the Antarctic. Collection of articles,* 1986, Vol.58, p.62-72, For Russian original see 38-4066. 8 refs.
Sea ice distribution, Drift, Atmospheric circulation, Boundary layer, Wind velocity, Wind direction.

42-637
Formation, structure and morphometric characteristics of a young ice hummock ridge.
Komarovskiĭ, V.A., *Problems of the Arctic and the Antarctic. Collections of articles,* 1986, Vol.58, p.112-116, For Russian original see 38-4067. 7 refs.
Sea ice distribution, Pack ice, Pressure ridges, Young ice, Ice navigation, Ice reporting, Drift stations, Fast ice.

42-638
Microclimate of living quarters of the GOSKOMGIDROMET polar stations.
Gorbonosova, N.B., et al, *Problems of the Arctic and the Antarctic. Collection of articles,* 1986, Vol.58, p.135-140, For Russian original see 38-4068. 9 refs.
Teshebaev, Sh.B.
Weather stations, Residential buildings, Microclimatology, Construction materials, Ventilation, Air temperature, Humidity.

42-639
Slope dynamics in the Ossola region, central Alps of northern Italy. [La dynamique des versants dans l'Ossola (Italie du Nord, Alpes centrales)],
Pech, P., *Revue de géographie alpine,* 1986, Vol.74, p.355-371, In French with English summary. 11 refs.
Geocryology, Slope stability, Geomorphology, Frost action, Snow cover effect, Rain, Periglacial processes, Italy—Alps.

42-640
Nevado El Ruiz eruption of Nov. 13, 1985; originality of the phreatic-magnetic and Plinian eruptive dynamism in an equatorial ice cap. [L'éruption du 13 novembre 1985 au Nevado El Ruiz; l'originalité du dynamisme éruptif phréato-magmatique et plinien sur une calotte glaciaire aux latitudes équatoriales],
Thouret, J.C., *Revue de géographie alpine,* 1986, Vol.74, p.373-391, In French. 15 refs.
Glacial geology, Volcanoes, Glacier flow, Geomorphology, Sediments, Colombia—Nevado El Ruiz.

42-641
Deglaciation of the site of Lac des Bèches, Ecrins Range. A palynological and glacio-morphological study. [La déglaciation du site du lac des Bèches (Massif des Ecrins). Etude pollenanalytique et glacio-morphologique],
Coûteaux, M., et al, *Revue de géographie alpine,* 1987, 75(1), p.63-77, In French with English summary. 9 refs.
Edouard, J.L.
Glaciation, Geomorphology, Palynology, Cirque glaciers, Rock glaciers, Lakes, Paleoclimatology, Mountains, Glacier oscillation, Age determination, France—Ecrins Range.

42-642
Influence of climate change and climatic variability on the hydrologic regime and water resources.
International Symposium [on] the Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources, Vancouver, B.C., Aug. 9-22, 1987, *International Association of Hydrological Sciences. Publication,* 1987, No.168, 640p., With French summaries. Refs. passim. For selected papers see 42-643 through 42-652.
Solomon, S.I., ed, Beran, M., ed, Hogg, W., ed.
Hydrology, Climatic changes, Glaciology, Water reserves, Precipitation (meteorology), Runoff, Meetings, Carbon dioxide, Paleoclimatology.

42-643
Analysis of the variation trend of the annual runoff on the northern slope of Qilian Shan.
Lai, Z., *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.27-36, 5 refs.
Runoff, Climatic changes, Hydrology, Precipitation (meteorology), Mountains, Seasonal variations, Temperature distribution, Altitude, China—Qilian Mountain.

42-644
Evaluation of runoff changes in the Lake River basin by simulating the precipitation-runoff process.
Buchtele, J., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.63-75, 3 refs.
Zemlicka, M.
Runoff, Climatic changes, Hydrology, Water reserves, Precipitation (meteorology), Snowmelt, Statistical analysis, Rain, Seasonal variations, Czechoslovakia.

42-645
Climatic fluctuations and runoff from glacierized Alpine basins.
Collins, D.N., *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.77-89, 10 refs.
Climatic changes, Glacial hydrology, Hydrology, Alpine glaciation, Runoff, Glacial rivers, Precipitation (meteorology), Mountains, Switzerland—Alps.

42-646
Paleohydrologic studies using proxy data and observations.
Liebscher, H.J., *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.111-121, 33 refs.
Carbon dioxide, Climatic changes, Hydrology, Paleoclimatology, Precipitation (meteorology), Soil water, Glacial hydrology, Glacier surveys.

42-647
Lake ice formation and breakup as an indicator of climate change: potential for monitoring using remote sensing techniques.
Maslanik, J.A., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.153-161, 10 refs.
Barry, R.G.
Lake ice, Climatic changes, Hydrology, Ice formation, Ice breakup, Remote sensing, Freezeup, Models, Seasonal variations, Photointerpretation, Finland.

42-648
Mass balance of North Cascade Glaciers and climatic implications.
Pelto, M.S., *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.163-171, 12 refs.
Climatic changes, Glacier mass balance, Runoff, Hydrology, Glacial hydrology, Temperature effects, Meltwater, Seasonal variations, Statistical analysis, United States—Washington—Cascade Range.

42-649
Long water balance time series in the upper basins of four important rivers in Europe—indicators for climatic changes?.
Schädler, B., *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.209-219, 8 refs.
Water balance, Climatic changes, Hydrology, Glacial hydrology, Precipitation (meteorology), Runoff, Synoptic meteorology, Statistical analysis, River basins.

42-650
Is the largest North American sub-arctic sand dune disappearing.
Whiting, J., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.339-353, 19 refs.
Wheaton, E.
Sands, Climatic changes, Hydrology, Glacial lakes, Eolian soils, Remote sensing, Meltwater, Ground water.

42-651
Glacial and hydrological regime under climatic influence in the Urumqi River, northwest China.
Yao, T., *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.367-377, 12 refs.
Climatic changes, Glacial hydrology, Hydrology, Glacial rivers, Glacier mass balance, Water balance, Glacier oscillation, Precipitation (meteorology), China—Urumqi River.

42-652
Primary study of the relationship between glacial mass balance and climate in the Qilian Mountain taking "July First" Glacier as an example.
Xie, Z., et al, *International Association of Hydrological Sciences. Publication,* 1987, No.168, Influence of Climate Change and Climatic Variability on the Hydrologic Regime and Water Resources. Edited by S.I. Solomon, M. Beran and W. Hogg, p.379-388, 6 refs.
Liu, C.
Climatic changes, Glacier mass balance, Hydrology, Glacier melting, Glacial hydrology, Mountains, Temperature effects, Glacier oscillation, China—Qilian Mountain.

42-653
Mechanical law of anisotropic rock ice during stationary regime. [Lois du comportement mécanique d'une roche glace anisotrope en régime stationnaire]
Andermann, I., *France. Centre national de la recherche scientifique. Laboratoire de glaciologie et de géophysique de l'environnement,* 1982, No.405, 92p., In French. Ph.D. thesis. Refs. p.90-92.
Ice crystal structure, Ice plasticity, Ice deformation, Ice creep, Anisotropy, Ice models, Tensile stress.
The stated purpose of this study was to determine the relationship between the rate of deformation and the stress deviator in ice with rotational orthotropic symmetry. The plastic behavior of an isotropic monocrystal is compared to that of a polycrystal. A method is described which permits to establish the power of the 3rd invariant of the stress deviator. The experimental setup is described and the mathematical derivations are given.

42-654
Design and construction of large-panel roofs. [Proektirovanie i stroitel'stvo krupnopanel'nykh kryshy]
Shtein, I.I., Leningrad, Strofizdat, 1987, 175p., In Russian with abridged English table of contents enclosed. 51 refs.
Heat loss, Large panel buildings, Roofs, Ventilation, Panels, Design, Environmental impact, Temperature, Humidity, Climatic factors.

42-655
Structural concrete and reinforced concrete. [Beton i zhelezobeton v stroitel'stve]
Mikhailov, K.V., et al, Moscow, Strofizdat, 1987, 103p., In Russian with abridged English table of contents enclosed. 13 refs.
Volkov, IU.S.
Concrete structures, Industrial buildings, Residential buildings, Reinforced concretes, Cements, Concrete admixtures, Prefabrication.

42-656
Roadbed construction for the Baykal-Amur mainline. [Sooruzhenie zemlianogo polotna Baĭkalo-Amurskoĭ magistrali]
Chernavskiĭ, V.P., et al, Moscow, Transport, 1987, 160p., In Russian with abridged English table of contents enclosed.
Tsvelodub, B.I., Taĭts, V.G.
Roadbeds, Earthwork, Permafrost beneath structures, Discontinuous permafrost, Cold weather construction, Embankments, Slope protection, Baykal Amur railroad.

42-657
Durability of concrete; fracture mechanical aspects.
Bache, H.H., *Nordic concrete research,* 1985, No.4, p.7-25, 5 refs.
Concrete durability, Frost action, Fracturing, Mechanical properties, Tensile properties, Crack propagation, Brittleness, Electrical properties.

42-658
Brittleness and strength of reinforcing steel bars under high loading rate at lowered temperatures.
Hyvönen, T., *Nordic concrete research,* 1985, No.4, p.81-88, 3 refs.
Low temperature tests, Steels, Loads (forces), Brittleness, Fracturing, Tensile properties.

42-659
Brittleness of reinforced concrete structures under arctic conditions.
Kivekäs, L., et al, *Nordic concrete research,* 1985, No.4, MP 2272, p.111-121, 5 refs. For another version see 41-213 (CR 86-02).
Korhonen, C.
Reinforced concretes, Concrete strength, Low temperature tests, Loads (forces), Brittleness, Concrete structures, Impact strength.
The behavior of reinforced and unreinforced concrete beams was studied under impact load at low temperatures, and the results were compared with the behavior of reinforcing steel in the Charpy-V impact-tests. Transition temperatures as high as -30 C were obtained in the Charpy-V test whereas at temperatures as low as -63 C no brittle failure occurred in the concrete beams, even in those beams where the rebars were intentionally notched. The impact strength of unreinforced concrete increased considerably at lower temperatures.

42-660
Long-term durability of concrete.
Rasmussen, T.H., *Nordic concrete research,* 1985, No.4, p.159-178, 7 refs.
Concrete durability, Concrete strength, Freeze thaw cycles, Concrete freezing, Compressive properties, Concrete admixtures.

42-661
Sea-ice influence on Arctic coastal retreat.
Reimnitz, E., et al, Specialty Conference on Advances in Understanding of Coastal Sediment Processes, New Orleans, LA, May 12-14, 1987. Proceedings. Coastal sediments '87, edited by N.C. Kraus, New York, American Society of Civil Engineers, 1987, p.1578-1591, Refs. p.1588-1591.
Barnes, P.W.
Shoreline modification, Ice cover effect, Shore erosion, Sea ice, Ice conditions, Pack ice, Sea level, Thaw weakening, Settlement (structural).

42-662
Subsystem for meteorological, actinometric and aerological observations in the polar regions. [Podsistema meteorologicheskikh, aktinometricheskikh, aerologicheskikh nabludeniĭ v poliarnykh raĭonakh]
Koptev, A.P., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.403, p.7-25, In Russian. 24 refs.
Kazakova, N.N., Gil'chenko, N.G.
Meteorology, Data processing, Data transmission, Drift stations, Polar regions.
Subsystems designed for observations in the polar regions, methods of measurements, and instrumentation are described. Guidelines toward greater data reliability, and further improvements on measuring systems and equipment, are provided. Illustrations of the systems are included.

42-663
Method for measuring air temperature and evaluation of its reliability. [Metod izmereniia temperatury vozdukha i otsenka ego pogreshnosti]
Gil'chenko, N.G., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.403, p.26-34, In Russian. 15 refs.
Meteorology, Drift stations, Data processing, Weather forecasting.
Studies on the reliability of a method used in measuring air temperature at antarctic stations are discussed. The limit of allowable error in this method is determined to be 1.0C. It is shown that the method under discussion meets the need of providing the correct meteorological information indispensable for operational meteorological forecasts.

42-664
Actinometric data processing and prospects of its development on ES computers. [Obrabotka aktinometricheskoĭ informatsii i perspektivy ee razvitiia na EVM ES],
Alekseeva, R.P., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.403, p.79-91, In Russian. 5 refs.
Dubovtseva, V.V.
Meteorology, Drift stations, Solar radiation, Data processing, Computer programs.
A step-by-step procedure of actinometric data processing in polar regions is discussed, including automatic and semiautomatic methods of data gathering, a critical computerized analysis of the data and an objective evaluation of the functioning of the station's operator and of the quality of the actinometric information obtained.

42-665
Algoritm for processing and control of hourly data in meteorological surveys. [Algoritm obrabotki i kontrolia ezhechasnykh dannykh meteorologicheskikh nabliudeniĭ],
Balabanov, V.S., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.403, p.92-98, In Russian. 2 refs.
Meteorology, Drift stations, Computer programs, Data processing.
A flowchart is presented of a program for the processing and control of meteorological information, with detailed analysis of the following blocks: preliminary preparation of data processed, introduction into the computer, control of syntax and logic, control of accidental and systematic errors, and printing of errors.

42-666
Flowchart for processing and control of meteorological information from Soviet antarctic and *North Pole* drift stations. [Blok-skhema obrabotki i kontrolia meteorologicheskoĭ informatsii sovetskikh antarkticheskikh i dreĭfuiushchikh stantsiĭ *Severnyĭ polius*],
Balabanov, V.S., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.403, p.99-106, In Russian. 9 refs.
Rechnov, A.A.
Meteorology, Drift stations, Data processing.
A flowchart is presented for automated processing and control of meteorological data, which deals with methods used in polar regions. The chart is based on the correlation of meteorological data obtained at Soviet antarctic research stations, and the *North Pole* drift stations, and classifies accidental and systematic errors testing different data control methods.

42-667
Ice-information automation system for research vessels in the southern ocean based on the SM-4 computer. [Avtomatizirovannaia ledovo-informatsionnaia sistema dlia nauchno-operativnogo obespecheniia sudokhodstva v IUzhnom okeane (na baze EVM SM-4)],
Romanov, A.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1986, Vol.403, p.186-199, In Russian. 9 refs.
Studitskiĭ, V.A.
Sea ice, Mapping, Ice edge, Data processing, Fast ice, Polar regions.
The principles of a system handling ice data, developed for the SM-4 computer, are discussed. The data, such as the location of drifting ice and the edge of fast ice, and of ice of different compaction, are also used in the compilation of maps of the ice regime in the southern ocean for 1956-1981.

42-668
Understanding ice dynamics.
Allison, I., *Australian natural history,* Summer 1986-87, 22(3), p.110-111.
Ice sheets, Sea ice, Antarctica.
A brief sketch is given of the massive ice cover over the land and sea areas of the antarctic region. The winter cover nearly doubles the size of the Continent as 20 million sq km of sea ice encapsulate the land mass. The impact of the ice is noted and methods of extracting data from it are mentioned.

42-669
Floating giants.
Hamley, T., *Australian natural history,* Summer 1986-87, 22(3), p.112-115.
Icebergs, Distribution, Antarctica.
Birth of icebergs calving from the ice shelves and glaciers of Antarctica is briefly recounted along with historical perceptions of and experiences with icebergs as objects of terror, disaster, and enchantment. Distribution, erosion, melting, rollovers, and eventual reduction to drops of freshwater mixing with sea water are described.

42-670
Formulating the future.
Quilty, P., *Australian natural history,* Summer 1986-87, 22(3), p.116-118.
Economic development, Research projects, Antarctica.
The possibilities for extracting antarctic natural resources are outlined. Major considerations include the development of fisheries, ice as a fresh water source, minerals, tourism, and research. Major roadblocks hindering the realization of some of these possibilities include the uncertainty of the annual stocks of krill and fish (in the case of fisheries development), and the 2,500 m thick ice sheet atop possible mineral deposits. A reinforced plastic wrapper about icebergs may be a possible alternative to towing. Other considerations include the need for the careful use of the fragile antarctic environment and the effects of human activities on Antarctica.

42-671
Photosynthesis and cell division by antarctic microalgae: comparison of benthic, planktonic and ice algae.
Rivkin, R.B., et al, *Journal of phycology,* June 1987, 23(2), p.223-229, 52 refs.
Putt, M.
Photosynthesis, Sea ice, Algae, Plankton, Cryobiology.
Irradiance-dependent rates of photosynthesis and cell division of 6 species of microalgae isolated from the benthos, plankton and sea ice microbial community in McMurdo Sound were compared. Microalgae isolated from different photic environments had distinct photosynthetic and growth characteristics. The slope of the light-limited portion of the P-I relationship was up to 50 times greater for the benthic algae than for either the ice or planktonic algae suggesting that benthic algae used the low irradiances more efficiently for carbon uptake. Cell division was dependent on the incubation irradiance for all but one microalga examined. The dependence of division rates on irradiance was however much smaller than for carbon uptake, suggesting that cell division buffers the influence of short term variations of irradiance on cellular metabolism. (Auth.)

42-672
Winter crossing using ribbon bridges.
Wait, M.R., *Military engineer,* Aug. 1987, 79(516), p.450-451.
River crossings, Bridges, Ice control, Ice cutting, Military operation.

42-673
Military snow removal problems.
Minsk, L.D., *Military engineer,* Aug. 1987, 79(516), MP 2268, p.452-453.
Snow removal, Military operation.

42-674
Bit design improves augers.
Sellmann, P.V., et al, *Military engineer,* Aug. 1987, 79(516), MP 2269, p.453-454.
Brockett, B.E.
Augers, Frozen ground.

42-675
Ground freezing controls hazardous waste.
Iskandar, I.K., *Military engineer,* Aug. 1987, 79(516), MP 2270, p.455-456.
Soil freezing, Artificial freezing, Waste disposal.

42-676
Optimizing the methods of winter concreting. [Optimizatsiia metodov zimnego betonirovaniia],
Golovnev, S.G., Leningrad, Stroĭizdat, 1983, 233p., In Russian with abridged English table of contents enclosed. 40 refs.
Winter concreting, Concrete placing, Concrete hardening, Concrete freezing, Concrete aggregates, Cements, Concrete curing, Concrete strength.

42-677
Improving the strength and durability of concrete. [Povyshenie prochnosti i vynoslivosti betona],
Grushko, I.M., et al, Kar'kov, Vyshcha shkola, 1986, 149p. (pertinent p.51-92), In Russian with abridged English table of contents enclosed. 80 refs.
Il'in, A.G., Chikhladze, E.D.
Concrete strength, Concrete freezing, Freeze thaw cycles, Tests.

42-678
Description and evaluation of the Alaska pavement rating procedure.
McHattie, R.L., *Alaska. Dept. of Transportation and Public Facilities. Report,* Feb. 1982, FHWA-AK-RD-82-15, 56p. + appends., 10 refs.
Pavements, Bituminous concretes, Road maintenance, Surface roughness, Fatigue (materials), Cracking (fracturing), Damage, United States—Alaska.

42-679
Frost jacking forces on H and pipe piles embedded in Fairbanks silt.
Johnson, J.B., *Alaska. Dept. of Transportation and Public Facilities. Report,* Mar. 1984, AK-RD-84-13, MP 2271, 42p. + appends., For another version see 40-676. 19 refs.
Frost heave, Pile extraction, Permafrost distribution, Thermopiles, Analysis (mathematics), Temperature effects, Frozen ground mechanics, Countermeasures, Frost penetration.

42-680
Environmental review of summer construction of gravel islands: Sag Delta No.7 and No.8, Stefanson Sound, Alaska.
Evans, C.C., et al, Anchorage, Arctic Environmental Information and Data Center, Mar. 1980, 83p. + appends., 21p. of refs.
AEIDC, QH541.5A7A51 I54
Subsea permafrost, Artificial islands, Ice conditions, Sediments, Gravel, Sea ice, Marine biology, Stability, Environmental impact, United States—Alaska—Stefanson Sound.

42-681
Environmental studies of the proposed Terror Lake hydroelectric project, Kodiak Island, Alaska: instream flow studies.
Wilson, W.J., et al, Anchorage, Oct. 1986, 197p., Refs. p.157-159.
Alaska. University. Arctic Environmental Information and Data Center.
AEIDC, QH541.5 R5 A4A82
River basins, Lakes, Stream flow, Environmental protection, Electric power, Ecology, Hydrography, Watersheds, Human factors, United States—Alaska—Terror Lake.

42-682
Assessment of environmental effects of construction of the Terror Lake hydroelectric facility, Kodiak Island, Alaska.
Wilson, W.J., et al, Anchorage, Nov. 1979, 334p., Refs. p.281-303.
Underwood, L.S., Alaska. University. Arctic Environmental Information and Data Center.
AEIDC QH541.5 R5 A4A8
Stream flow, Lakes, Ecology, Snowfall, Electric power, Environmental impact, Hydrology, Climate, Geomorphology, United States—Alaska—Kodiak Island.

42-683
Geology of the Antarctic.
Ivanov, V., et al, *Science in the USSR,* Mar.-Apr. 1987, No.2, p.100-111.
Grikurov, G., Masolov, V.
Ice sheets, Continental drift, Antarctica.
An outline of the history of Soviet geological studies in the Antarctic is presented, and the theory that Antarctica is likely to actively disintegrate, under the action of a system of transcontinental rifts, into major blocks gradually submerging into the ocean is discussed. Diagrams of geological and geophysical studies, of the antarctic ice cover and of the rift zones in Antarctica, are included.

42-684
Calculations of freezing and thawing beneath buildings on permafrost. [Raschety ottaivaniia i promerzaniia v osnovaniiakh zdaniĭ na mnogoletnemerzlykh gruntakh],
Demchenko, R.IA., Yakutsk, 1986, 89p., In Russian with English table of contents enclosed. Refs. p.84-88.
Permafrost bases, Concrete structures, Foundations, Buildings, Active layer, Freeze thaw cycles, Design.

42-685
Glaciology of mountainous regions (snow cover, glaciers and avalanches). [Gliatsiologiia gornykh oblasteĭ (snezhnyĭ pokrov, ledniki i laviny)],
Konovalov, V.G., ed, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1987, Vol.123, 137p., In Russian. For individual papers see 42-686 through 42-702. Refs. passim.
Snow cover distribution, Snow cover stability, Blasting, Snow surveys, Avalanche engineering, Snow water equivalent, Rock glaciers, Glacier ice, Ice volume, Ice surveys, Alpine landscapes.

42-686
Variability of characteristics of a stable snow cover in mountains of Central Asia. [Izmenchivost' kharakteristik ustoĭchivogo snezhnogo pokrova v gorakh Sredneĭ Azii],
Arkhipova, O.M., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1987, Vol.123, p.3-12, In Russian. 7 refs.
Getker, M.I., Tsarev, B.K.
Snow cover distribution, Snow cover stability, Snow depth, Snow surveys, Alpine landscapes.

42-687
Regularities governing vertical distribution of snow reserves during winter periods in the mountains of Kazakhstan. ¡Zakonomernosti vertikal'nogo raspredeleniia snegozapasov v techenie zimnego perioda v gornykh raĭonakh Kazakhstana¡,
Kolesnikov, E.I., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.12-21, In Russian. 5 refs.
Podstrechnyĭ, A.N.
Mountains, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Water reserves.

42-688
Methods of forecasting river runoff in Central Asia resulting from snow-glacier alimentation. ¡Metody prognoza stoka rek Srednei Azii s lednikovo-snegovym pitaniem¡,
Konovalov, V.G., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.22-32, In Russian. 4 refs.
Glacier ablation, Snow water equivalent, Glacial rivers, Runoff, Alpine landscapes.

42-689
Characteristics of external mass transfer on the Pamir firn plateau below Communism Peak. ¡Kharakteristika vneshnego massoobmena Pamirskogo firnovogo plato pod pikom Kommunizma¡,
Diurgerov, M.B., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.33-41, In Russian. 5 refs.
Mountain glaciers, Firn, Glacier alimentation, Snow accumulation, Ablation, Glacier mass balance, Metamorphism (snow).

42-690
One more method of calculating total area of glaciers from limited orographic and climatic data. ¡Eshche odin metod rascheta chisla i summarnoĭ ploshchadi lednikov po ogranichennoĭ oroklimaticheskoĭ informatsii¡,
Glazyrin, G.E., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*. 1987, Vol.123, p.41-45, In Russian. 7 refs.
Pershukova, M.M.
River basins, Glaciation, Mountain glaciers, Glacier ice.

42-691
Glacial surges and their possible effect on activation of earthquakes. ¡Pul'satsiia lednikov i vozmozhnoe ee vliianie na aktivizatsiiu zemletriasenĭ¡,
Freĭfel'd, V.IA., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.46-54, In Russian. 9 refs.
Earthquakes, Avalanches, Glacier surges.

42-692
Hydrographic structure of glaciers and its relation to the type of glaciation. ¡Gidrograficheskaia struktura lednikov i ee sviaz' s tipom oledeneniia¡,
Sokolov, L.N., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.54-58, In Russian. 6 refs.
River basins, Hydrography, Mountain glaciers, Glacial hydrology.

42-693
Ice reserves in the Dzhungarskiy Alatau glaciers. ¡Zapasy l'da v lednikakh Dzhungarskogo Alatau¡,
Cherkasov, P.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.58-65, In Russian. 8 refs.
Ice volume, Mountain glaciers, Alpine landscapes, Glacier ice.

42-694
Water regime in the body of a glacier. ¡Rezhim vody v tele lednika¡,
Akbarov, A.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.65-72, In Russian. 7 refs.
Glacier ice, Glacial hydrology, Glacial rivers, Runoff.

42-695
Relation of air temperature in the glaciation zone to glacio-geomorphological parameters of glaciers in Central Asia. ¡Sviaz' temperatury vozdukha v gliatsial'noĭ zone s gliatsiogeomorfologicheskimi parametrami lednikov Srednei Azii¡,
Volkova, M.V., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.72-83, In Russian. 11 refs.
Tikhanovskaia, A.A., Kharitonov, G.G.
Glacier ice, Solar radiation, Hydrothermal processes, Air temperature, Glacier ablation.

42-696
Reconstruction of morphometric characteristics of Abramov Glacier. ¡Opyt rekonstruktsii morfometricheskikh kharakteristik ledn. Abramova¡,
Bassin, N.S., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.84-93, In Russian. 11 refs.
Kamnianskiĭ, G.M.
Mountain glaciers, Glacier ice, Radar echoes, Ice surveys, Glacier flow, Velocity.

42-697
New data on the retreat of some Alay glaciers. ¡Novye dannye o sokrashchenii nekotorykh lednikov Alaia¡,
Kreĭter, A.A., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.94-99, In Russian. 9 refs.
Bassin, N.S., Zharkinbekov, M., Petrov, M.A.
Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier melting.

42-698
Rock glacier formation in upper reaches of the Shakhimardansay River. ¡Obrazovanie kamennogo gletchera v verkhov'iakh reki Shakhimardansaĭ¡,
Petrov, M.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.100-102, In Russian. 3 refs.
Rock glaciers, Slope processes, Glacial erosion, Moraines, Avalanches.

42-699
Snow avalanches in mountain-forest areas of Tien Shan exemplified by some river basins. ¡Snezhnye laviny gorno-lesnykh raĭonov Tian'-Shania (na primere nekotorykh rechnykh basseĭnov)¡,
Moskalev, IU.D., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.102-110, In Russian. 7 refs.
Popov, B.B.
Mountains, Forests, Slope processes, Avalanche formation, Avalanche erosion.

42-700
Using blasting techniques in collapsing and stabilizing snow cover on slopes. ¡Obrushenie i zakreplenie snega na sklonakh vzryvami¡,
Moskalev, IU.D., et al, *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.111-117, In Russian. 7 refs.
Morgunov, IU.L.
Snow depth, Slope processes, Snow stabilization, Blasting, Snow accumulation, Snow cover distribution.

42-701
Daily forecasts of wet-snow avalanches in western Tien-Shan. ¡Metodika sutochnogo prognoza mokrykh lavin v usloviiakh Zapadnogo Tian'-Shania¡,
Kharitonov, G.G., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.118-126, In Russian. 5 refs.
Avalanche forecasting, Wet snow, Avalanche formation, Avalanche triggering.

42-702
Statistical evaluation of the coefficient of resistance to avalanche movement. ¡O statisticheskoĭ otsenke koeffitsienta soprotivleniia dvizheniiu lavin¡,
Kanaev, L.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.123, p.126-130, In Russian. 6 refs.
Avalanche mechanics, Statistical analysis.

42-703
Physical and technical problems of northern Transbaikal. ¡Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia¡,
Narkeliun, L.F., ed, Novosibirsk, Nauka, 1987, 136p., In Russian. For selected papers see 42-704 through 42-712. Refs. passim.
Permafrost beneath structures, Construction materials, Wastes, Construction equipment, Cold weather performance, Buildings, Foundations, Concrete structures, Reinforced concretes, Lightweight concretes, Winter concreting.

42-704
Technical severity of weather in Udokan and assessment of its effect on equipment performance. ¡Tekhnicheskaia zhestokost' pogody Udokana i uchet ee vliianiia na proizvoditel'nost' oborudovaniia¡,
Podsokhin, E.L., et al, Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.42-49, In Russian. 7 refs.
Pal'chikova, O.A.
Quarries, Mining, Climatic factors, Machinery, Equipment, Cold weather operation, Winter maintenance.

42-705
Studying seasonal cycles in the performance of drilling rigs in quarries under severe climatic conditions. ¡Issledovanie sezonnoĭ tsiklichnosti v rabote burovykh stankov na kar'erakh s surovymi klimaticheskimi usloviiami¡,
Bashlaev, I.I., Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.49-55, In Russian. 4 refs.
Mining, Rock excavation, Permafrost, Drilling, Boreholes, Cold weather performance.

42-706
Tectonic and cryogenic disturbances of locations of the Udokan Mining-Metallurgical Combine. ¡Tektonicheskaia i kriogennaia narushennost' uchastkov territorii Udokanskogo GOKa¡,
Borovikov, A.M., et al, Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.69-74, In Russian. 3 refs.
Mining, Permafrost structure, Geocryology, Geology, Tectonics.

42-707
Natural conditions of the development of exogenous geological processes in the area of the Udokan deposit. ¡Prirodnye usloviia razvitiia ekzogennykh geologicheskikh protsessov v raĭone Udokanskogo mestorozhdeniia¡,
Laperdin, V.K., Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.75-83, In Russian. 4 refs.
Cold weather construction, Mining, Permafrost distribution, Geologic processes, Geocryology, Baykal Amur railroad.

42-708
New porous aggregate for construction in northern Transbaikal. ¡Novyĭ poristyĭ zapolnitel' dlia stroitel'stva na severe Zabaĭkal'ia¡,
Golovachev, G.K., et al, Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.99-105, In Russian.
Imetinov, N.B., Kon IU.M., Sedin, A.F.
Cements, Construction materials, Wastes, Frost resistance, Lightweight concretes, Permafrost beneath structures, Concrete aggregates, Gravel, Ash.

42-709
Strength of sand-concrete during hardening after early freezing. ¡Prochnost' peskobetona pri tverdenii posle rannego zamorazhivaniia¡,
Tabolin, V.S., Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.105-112, In Russian. 4 refs.
Winter concreting, Concrete aggregates, Sands, Cements, Concrete freezing, Concrete strength, Frost resistance, Tests, Freeze thaw cycles.

42-710
Economic efficiency of using sand-concrete under severe climatic conditions. ¡Ekonomicheskaia effektivnost' primeneniia peskobetona dlia surovykh klimaticheskikh uslovii¡,
Tabolin, V.S., Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.112-115, In Russian.
Concretes, Cements, Concrete aggregates, Sands, Winter concreting, Concrete strength, Frost resistance.

42-711
Economics of foundation construction on frozen ground in the Chita region. [Ekonomika fundamentostroeniia na merzlykh gruntakh v Chitinskoĭ oblasti],
Shekemov, IU.V., et al, Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.115-121, In Russian.
Elgin, B.B., Zheleznĭak, I.I., Ivin, I.A.
Economic analysis, Concrete structures, Reinforced concretes, Foundations, Permafrost beneath structures, Piles.

42-712
Bearing strength of pile bases in thawing grounds of Central and Eastern Transbaikal. [Nesushchaia sposobnost' osnovaniĭ svaĭ v ottaivaiushchikh gruntakh Tsentral'nogo i Vostochnogo Zabaĭkal'ia],
Torgashev, B.B., Fiziko-tekhnicheskie problemy severa Zabaĭkal'ia (Physical and technical problems of northern Transbaikal) edited by L.F. Narkeliun, Novosibirsk, Nauka, 1987, p.121-129, In Russian. 7 refs.
Winter concreting, Piles, Foundations, Permafrost bases, Permafrost thermal properties, Active layer.

42-713
Iceberg dynamics—project report.
Bruneau, A.A., et al, St. John's, Memorial University of Newfoundland, 1972, 3 vols.
Dempster, R.T.
Iceberg towing, Ice mechanics, Loads (forces), Drift, Ocean currents, Equipment, Wind factors, Design, Forecasting, Ice volume.

42-714
Ice forces on Hans Island, 1981.
Danielewicz, B.W., et al, *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Dec. 1982, APOA 181-1, 61p. + append., 3 refs.
Metge, M.
Ice loads, Offshore structures, Ice floes, Ice pressure, Drift, Velocity, Offshore landforms, Ice mechanics, Hydrodynamics.

42-715
Model for retrieving total sea ice concentration from a spaceborne dual-polarized passive microwave instrument operating near 90 GHz.
Svendsen, E., et al, *International journal of remote sensing,* Oct. 1987, 8(10), p.1479-1487, 10 refs.
Mätzler, C., Grenfell, T.C.
Sea ice distribution, Remote sensing, Ice conditions, Mathematical models, Microwaves.

42-716
On the contribution of volume scattering to the microwave backscattered signal from wet snow and wet soil.
Schanda, E., *International journal of remote sensing,* Oct. 1987, 8(10), p.1489-1500, 20 refs.
Wet snow, Soil water, Backscattering, Remote sensing, Radar echoes, Scattering, Snow water content, Analysis (mathematics).

42-717
Fire tests on loose-fill insulation materials.
Kokkala, M., *Finland. Technical Research Centre. Research report,* June 1987, No.485, 60p. + append., With Finnish summary. 34 refs.
Thermal insulation, Fires, Construction materials, Standards.

42-718
Condensation of supersaturated water vapor at low temperatures in a shock tube.
Peters, F., *Journal of physical chemistry,* May 7, 1987, 91(10), p.2487-2489.
Low temperature tests, Condensation, Water vapor, Supersaturation, Cloud chambers.

42-719
Attraction of the poles. [Pritiazhenie poliusov],
Koshechkin, B.I., Leningrad, Lenizdat, 1987, 184p., In Russian.
Polar regions, Expeditions, Exploration.
This biography opens with a description of the early experiences of the Soviet scientist and explorer A.F. Treshnikov which led to his life-long interest in both polar regions. Details of many expeditions to the Arctic and to Antarctica are presented in subsequent chapters in chronological order, outlining a profile of the man himself by revealing the thoughts and feelings driving him in his pioneering activities.

42-720
On the draughts of some large antarctic icebergs.
Jacobs, S., et al, *Iceberg research,* June 1987, No.14, p.3-13, 27 refs.
Barnett, D.
Icebergs, Ice shelves, Bottom topography, Antarctica—Filchner Ice Shelf, Antarctica—Larsen Ice Shelf.
A preliminary outline of two major events, the calving of Larsen Ice Shelf and that of Filchner Ice Shelf that occurred in 1986, is presented. Satellite images taken before and after the events, and tracks of the larger underway icebergs relative to the sea floor topography are shown. Past large-iceberg trajectories and some problems related to iceberg sizing are also noted.

42-721
Shipboard observations of a giant iceberg near Clarence Island, South Shetlands.
Amos, A.F., *Iceberg research,* June 1987, No.14, p.14-17.
Icebergs, Antarctica—Clarence Island.
This is a preliminary report on observations made of a giant iceberg from R/V *Polar Duke* on Jan. 9, 10, 11, 1987 near Clarence I. A description of the berg and the circumstances of its location as recorded in shipboard notes is presented. Figures show the cruise track of R/V *Polar Duke* in the vicinity of the big berg and the location of the iceberg from four separate sightings. (Auth. mod.)

42-722
Geography for resources management. [Geografiia—upravleniiu prirodopol'zovaniem],
Preobrazhenskiĭ, V.S., ed, Moscow, 1986, 146p., In Russian. For selected article see 42-723. 5 refs.
Aleksandrova, T.D., ed.
Natural resources, Environmental protection, Human factors engineering, Economic development, Environmental impact, Motor vehicles, Cold weather performance, Meteorological factors, Topographic effects.

42-723
Methodology of regionalization according to climatic severity, for the operation of motor vehicles. [Metodicheskie osnovy klimaticheskogo raĭonirovaniia dlia tseleĭ ekspluatatsii samokhodnykh mashin],
Krenke, A.N., et al, Geografiia—upravleniiu prirodopol'zovaniem (Geography for resources management) edited by V.S. Preobrazhenskiĭ and T.D. Aleksandrova, Moscow, 1986, p.122-139, In Russian. 5 refs.
Potapova, L.S.
Motor vehicles, Cold weather performance, Classifications, Regional planning, Alpine tundra, Meteorological factors, Forest tundra, Topographic effects, Taiga, Polar regions.

42-724
Landscape architecture of towns in Siberia and the European part of the North. [Landshaftnaia arkhitektura gorodov Sibiri i Evropeĭskogo Severa],
Khromov, IU.B., Leningrad, Strofizdat, 1987, 200p., In Russian with English table of contents enclosed. 41 refs.
Urban planning, Buildings, Roads, Architecture, Design, Landscape types, Taiga, Tundra, Forest tundra, Plains, Mountains.

42-725
Studies of massive rock properties and geological processes. [Izuchenie svoĭstv massivov porod i geologicheskikh protsessov],
Shesheniia, N.L., ed, Moscow, Nauka, 1986, 118p., In Russian. For selected papers see 42-726 through 42-730. Refs. passim.
Zykov, IU.D., ed.
Peat, Rheology, Thermokarst, Slope processes, Geologic processes, Permafrost distribution, Permafrost hydrology, Naleds, Avalanches, Roads, Mountains, Deformation, Geocryology, Permafrost structure, Permafrost thermal properties, Swamps.

42-726
Using test-hole stamp in studying thawing ground deformation in the Vorkuta area. [Izuchenie deformatsionnykh svoĭstv ottaivaiushchikh gruntov raĭona g. Vorkuty skvazhinnym shtampom],
Dukhin, I.E., et al, Izuchenie svoĭstv massivov porod i geologicheskikh protsessov (Studies of massive rock properties and geological processes) edited by N.L. Sheshenia and IU.D. Zykov, Moscow, Nauka, 1986, p.41-44, In Russian.
Nikolaeva, N.S., Tkacheva, L.A.
Ground thawing, Soil profiles, Deformation, Soil physics, Rheology, Boreholes, Tests.

42-727
Regularities governing the development of exogenic geological processes in mountains. [Zakonomernosti razvitiia ekzogennykh geologicheskikh protsessov v gornykh raĭonakh],
Sheshenia, N.L., et al, Izuchenie svoĭstv massivov porod i geologicheskikh protsessov (Studies of massive rock properties and geological processes) edited by N.L. Sheshenia and IU.D. Zykov, Moscow, Nauka, 1986, p.66-77, In Russian.
Vasil'ev, V.I.
Hydrothermal processes, Frost shattering, Landslides, Solifluction, Frost heave, Mountains, Thermokarst, Naleds, Permafrost distribution, Active layer.

42-728
Geophysical methods of studying frozen rocks in Mongolia. [Izuchenie merzlykh porod MNR geofizicheskimi metodami],
Zykov, IU.D., et al, Izuchenie svoĭstv massivov porod i geologicheskikh protsessov (Studies of massive rock properties and geological processes) edited by N.L. Sheshenia and IU.D. Zykov, Moscow, Nauka, 1986, p.78-87, In Russian. 4 refs.
Krasovskiĭ, A.G., Rozhdestvenskiĭ, N.IU., Chervinskaia, O.P.
Permafrost distribution, Engineering geology, Geophysical surveys, Acoustics, Electromagnetic prospecting, Radioactive isotopes, Frozen ground temperature, Soil profiles.

42-729
Estimating man-induced factors of avalanche danger when building roads in mountains. [Otsenka tekhnogennykh faktorov lavinnoĭ opasnosti pri stroitel'stve dorog v gorakh],
Baulina, L.L., Izuchenie svoĭstv massivov porod i geologicheskikh protsessov (Studies of massive rock properties and geological processes) edited by N.L. Sheshenia and IU.D. Zykov, Moscow, Nauka, 1986, p.96-99, In Russian.
Roadbeds, Avalanche formation, Avalanche triggering, Avalanche mechanics, Mountains.

42-730
Frozen peat bogs of western Siberia. [Merzlye torfianiki Zapadnoĭ Sibiri],
Streletskaia, I.D., Izuchenie svoĭstv massivov porod i geologicheskikh protsessov (Studies of massive rock properties and geological processes) edited by N.L. Sheshenia and IU.D. Zykov, Moscow, Nauka, 1986, p.100-108, In Russian.
Swamps, Thermokarst, Sporadic permafrost, Peat, Frost mounds, Mining, Forest tundra, Taiga, Construction, Roadbeds, Foundations.

42-731
Underwater blasting. [Vzryvnye raboty pod vodoĭ],
Galkin, V.V., et al, Moscow, Nedra, 1987, 232p., In Russian with abridged English table of contents enclosed. 49 refs.
Gil'manov, R.A., Drogoveĭko, I.A.
Ice blasting, Ice cover thickness, Underwater ice, Borehole instruments, Ice drills, Ice breaking, Hydraulic structures, Foundations, Pits (excavations), Safety.

42-732
Hydrochemical processes associated with naled formation. [Gidrokhimicheskie protsessy pri naledeobrazovanii],
Ivanov, A.V., Vladivostok, 1983, 108p., In Russian with English table of contents enclosed. 239 refs.
Naleds, Ground water, Permafrost hydrology, Glacial hydrology, Land ice, Ice composition, Water chemistry, Phase transformations.

42-733
Arctic marine navigation and ice dynamics—summary findings.
Weeks, W.F., MP 2274, Arctic marine technology—Airlie House Workshop, Warrenton, VA, Feb. 26-28, 1973. [Proceedings], Washington, D.C., [1973], p.86-99.
Ice navigation, Ice mechanics, Ships, Marine transportation, Vehicles, Environmental impact, Meteorology.

42-734
Arctic marine commerce study, Vol.1: final report; summary.
Arctic Institute of North America, June 30, 1973, 42p.
Offshore structures, Marine transportation, Ports, Pipelines, Environmental impact, International cooperation, Meetings, United States—Alaska.

42-735
Arctic marine commerce. Final report. Volume 1. Arctic Institute of North America, Aug. 1973, 305p. (pertinent p.193-221), 6 refs.
Marine transportation, Offshore structures, Icebreakers, Ice conditions, Cargo, Economic development, Moorings, Pipelines, Offshore drilling.

42-736
Use of electronic methods for soil investigations. [Användning av elektroniska metoder för markundersökning],
Rummukainen, A., *Sweden. Samarbetsorganisationen för fordon-markforskning. Meddelande,* 1987, No.34, Nordisk konferens terrängtransporter, Strängnäs, May 28-29, 1984 (Northern Conference on Off-Road Transportation). Proceedings, p.72-81, In Swedish with English summary, p.12. 13 refs.
Soil trafficability, Dielectric properties, Frost action, Snow cover effect, Radiometry, Radio waves, Radar echoes.

42-737
Appraisal of a low-cost side-looking airborne radar for Beaufort Sea ice reconnaissance.
Dome Petroleum Ltd., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Sep. 1982, APOA 184-1, c 69p., 7 refs.
Ice surveys, Side looking radar, Offshore drilling, Airborne radar, Photography, Cloud cover, Fog, Beaufort Sea.

42-738
Beaufort Sea "GEOPOS" study (Geotechnical evaluation of Permafrost on Casings).
Beuker, G.H., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* May 1981, APOA 183-1, 27p. + graphs.
Subsea permafrost, Well casings, Ground thawing, Rheology, Soil creep, Computer applications, Design, Strains, Forecasting, Beaufort Sea.

42-739
Modal dynamics and stabilizer design for galloping transmission lines.
Biswas, S.K., et al, *Electric power systems research,* June 1987, 12(3), p.175-182, 19 refs.
Riaz, H., Ahmed, N.U.
Transmission lines, Power line icing, Wind factors.

42-740
Electromagnetic scattering from dielectric bodies of revolution: theoretical and experimental results.
Kishk, A.A., et al, *Electromagnetics,* 1987, 7(1), p.51-60, 11 refs.
Antar, Y.M.M., Shafai, L., Allan, L.E.
Radar echoes, Backscattering, Cloud physics, Radio waves.

42-741
Modeling the runoff of mountain rivers from satellite information. [Modelirovanie stoka gornykh rek i sputnikovaia informatsiia],
Muzylev, E.L., Moscow, Nauka, 1987, 136p., In Russian with abridged English table of contents enclosed. 192 refs.
Runoff, Snowmelt, Remote sensing, Spaceborne photography, Stereophotography, Snow water equivalent, Snow surveys, Stereomapping, Spacecraft, Alpine landscapes, Mathematical models, Snow cover distribution, River basins.

42-742
Energy-saving technology for structures of high-strength reinforced concrete with chemical admixtures. [Energosberegaiushchaia tekhnologiia zhelezobetonnykh konstruktsii iz vysokoprochnogo betona s khimicheskimi dobavkami],
Babaev, Sh.T., et al, Moscow, Strolizdat, 1987, 240p., In Russian with abridged English table of contents enclosed. 96 refs.
Komar, A.A.
Concrete freezing, Reinforced concretes, Concrete admixtures, Concrete aggregates, Wastes, Concrete hardening, Concrete strength, Frost resistance, Prefabrication.

42-743
Geology, hydrogeology and geochemistry of oil and gas of the southern slope of the Anabar anteclise. [Geologiia, gidrogeologiia i geokhimiia iuzhnogo sklona Anabarskoi anteklizy],
Koval'skii, V.V., ed, Yakutsk, SO AN SSSR, 1986, 176p. (pertinent p.68-110), In Russian with abridged English table of contents enclosed. Refs. p.171-174.
Bilanenko, V.A., ed.
Petroleum industry, Drilling, Natural gas, Hydrogeology, Permafrost distribution, Permafrost hydrology, Suprapermafrost ground water, Subpermafrost ground water.

42-744
Hydrologic calculations and forecasts. [Gidrologicheskie raschety i prognozy],
Skotselias, I.I., ed, *Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy,* 1987, Vol.97, 113p., In Russian. For selected papers see 42-745 and 42-746. Refs. passim.
River basins, Snow cover distribution, Albedo, Snow water equivalent, Snow evaporation, Measuring instruments, Accuracy.

42-745
Using albedo in calculating snowmelt from air temperature. [Ispol'zovanie al'bedo pri raschete snegotaianiia po temperature vozdukha],
Golubtsov, V.V., et al, *Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy,* 1987, Vol.97, p.19-24, In Russian. 5 refs.
Li, V.I.
River basins, Snow surveys, Snow cover distribution, Albedo, Snow water equivalent, Snowmelt, Alpine landscapes, Mathematical models.

42-746
Snow evaporation in northern Kazakhstan. [Isparenie snega v severnom Kazakhstane],
Zavodchikov, A.B., *Kazakhskii regional'nyi nauchno-issledovatel'skii institut. Trudy,* 1987, Vol.97, p.102-106, In Russian. 3 refs.
Snow evaporation, Measuring instruments, Accuracy, Meteorological factors.

42-747
New cartometric determinations of antarctic ice volume. [Novye kartometricheskie opredeleniia ob'-'ema l'da Antarktidy],
Berliant, A.M., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Jan.-Feb. 1987, No.1, p.34-40, In Russian. 11 refs.
Serapinas, B.B., Suetova, I.A.
Ice volume, Ice models, Mapping, Ice shelves.
Various methods used in measuring the antarctic ice sheet volume for compilation of maps are evaluated. Pertinent literature is reviewed, and figures and tables are presented for the following: mean values of ice sheet volume, for the continent alone and with the inclusion of ice shelves; ice volume determination, with the assistance of hypsographic curves of the ice sheet, the bedrock area above and below sea level, and of the ice shelves. Fragments of maps showing ice surface features, subglacial topography, and ice thickness are included.

42-748
Method for the development of a local climatological model for prediction of slipperiness on roads.
Bogren, J., et al, *Göteborgs Universitet. Naturgeografiska institutionen. GUNI rapport,* 1986, No.20, 54p., 16 refs.
Gustavsson, T.
Roads, Skid resistance, Weather forecasting, Models, Climatology, Surface temperature, Air temperature, Temperature effects.

42-749
Laboratory testing of three runway snow and ice control agents. Vol.1 Main report.
Comfort, G., Arctec Canada Ltd., FR 1934C, Kanata, Ontario, Mar. 1987, 63p., 6 refs.
Road icing, Ice control, Ice removal, Snow removal, Chemical ice prevention, Skid resistance, Friction, Temperature effects, Tests, Countermeasures.

42-750
Sea ice conditions and surface melt in the Arctic for spring 1979 and 1980 SMMR data.
Anderson, M.R., Boulder, University of Colorado, 1987, 129p., University Microfilms order No.8528459, Ph.D. thesis. Refs. p.118-124., For abstract see Dissertation abstracts international, Sec. B, Apr. 1986, p.3376-3377.
Ice conditions, Sea ice, Ice melting, Snow surface, Synoptic meteorology, Albedo, Seasonal variations, Remote sensing, Ice edge, Calving.

42-751
Plant cold hardiness.
International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986, New York, Alan R. Liss, Inc., 1987, 381p., Refs. passim. For selected papers see 42-752 through 42-759.
Li, P.H., ed.
Cold tolerance, Plant physiology, Plant tissues, Plants (botany), Frost resistance, Cold weather tests, Acclimatization, Damage, Freezing points.

42-752
Photosynthesis as a key process in plant response to low temperature: alteration during low temperature acclimation and impairment during incipient freeze-thaw injury.
Steffen, K.L., et al, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.67-99, Refs. p.95-99.
Palta, J.P.
Plant physiology, Cold tolerance, Photosynthesis, Acclimatization, Freeze thaw tests, Damage, Cold weather tests.

42-753
Mechanisms of freezing avoidance and freezing tolerance in tropical alpine plants.
Beck, E., et al, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.155-168, 14 refs.
Scheibe, R., Hansen, J.
Plant physiology, Cold tolerance, Mountains, Temperature effects, Freezing points.

42-754
Regional variation in cold hardiness of Sakhalin fir *(Abies sachalinensis* Mast.) in Hokkaido, Japan.
Eiga, S., et al, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.169-182, 15 refs.
Sakai, A.
Plant physiology, Cold tolerance, Frost resistance, Soil freezing, Climatic factors, Frost penetration, Freezing points, Damage.

42-755
Irreversible injury of Korean pine seedlings caused by winter solar radiation.
Da, L.T., et al, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.183-194, 10 refs.
Yue, H.J., Ying, J.D.
Plant physiology, Cold tolerance, Solar radiation, Freezing points, Snow cover effect, Cold weather tests, Chlorophylls.

42-756
Mechanisms of winter injury in Korean pine seedlings.
Yue, H.J., etal, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.195-201, 10 refs.
Da, L.T., Ying, J.D.
Cold tolerance, Plant physiology, Photosynthesis, Plants (botany), Damage.

42-757
Damage to conifer seedlings by summer frost and winter drought.
Christersson, L., et al, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.203-210, 13 refs.
Fircks, H. von, Sihe, Y.
Plant physiology, Frost action, Cold tolerance, Damage, Seasonal variations, Frost resistance, Climatic factors.

42-758
Freezing injury in purified plasma membranes from cold acclimated and non-acclimated needles of *Pinus sylvestris:* is the plasma membrane bound ion-stimulated ATPase the primary site of freezing injury.
Hellergren, J., et al, International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.211-220, Refs. p.218-220.
Widell, S., Lundborg, T.
Cold tolerance, Acclimatization, Plant physiology, Damage, Plants (botany), Freezing points, Cold weather tests, Temperature effects.

42-759
Effect of cold acclimation and freezing injury on electrical impedance of plant tissue.
Stout, D.G., International Seminar [on] Plant Cold Hardiness, Shanghai, China, Sep. 4-7, 1986. Proceedings. Plant cold hardiness. Edited by P.H. Li, New York, Alan R. Liss, Inc., 1987, p.243-258, 21 refs.
Plant physiology, Cold tolerance, Acclimatization, Freezing points, Damage, Plant tissues, Freeze thaw tests.

42-760
Merging of theory and practice.
International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986, Homewood, CA, ISSW Workshop Committee, [1987], 248p., Refs. passim. For selected papers see 42-761 through 42-794.
Avalanches, Snow surveys, Snow physics, Rescue operations, Accidents, Damage, Countermeasures, Skis, Mountains.

42-761
Avalanche hazard in Kaghan Valley, Himalaya Range, Pakistan.
De Scally, F., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.21-28, 10 refs.
Gardner, J.
Avalanche formation, Avalanche tracks, Landforms, Topographic features, Slope orientation, Snowfall, Mountains, Air temperature, Mapping, Pakistan—Kaghan Valley.

42-762
Deterministic model for snowdrift accumulation.
Berg, N.H., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.29-36, 30 refs.
Snowdrifts, Snow accumulation, Wind velocity, Snowfall, Mathematical models, Topographic features.

42-763
Storage and redistribution of snow upwind of an avalanche catchment.
Schmidt, R.A., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.37-40, 7 refs.
Hartman, H.
Snow cover distribution, Blowing snow, Avalanche formation, Snow loads, Snow depth, Sublimation, Humidity.

42-764
Cornices: their growth, properties and control.
McCarty, D., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.41-45, 4 refs.
Brown, R.L., Montagne, J.
Snow cornices, Snow mechanics, Explosives, Avalanche triggering, Meteorological factors, Countermeasures, Wind factors, Mountains.

42-765
Simple orographic precipitation model for the Pacific Northwest.
Hayes, P.S., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.46-55, 9 refs.
Precipitation (meteorology), Avalanche formation, Topographic effects, Mathematical models, Wind factors, Road maintenance, Weather forecasting, Velocity.

42-766
Augmenting snow by cloud seeding: a tool for managing water resources.
Robitaille, F.E., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.56-60, 8 refs.
Barlow, F.D., Renick, J.H.
Snowfall, Cloud seeding, Water supply, Water content, Meltwater, Mountains, Water reserves, Canada—Alberta—Rocky Mountains.

42-767
American Association of Avalanche Professionals.
Ferguson, S.A., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.61-63.
Avalanches, Organizations, United States.

42-768
Electrical measurements of snow wetness in undisturbed snow.
Bergman, J.A., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.64-68, 9 refs.
Snow water content, Snow electrical properties, Unfrozen water content, Avalanche formation, Rain, Wet snow, Meltwater.

42-769
Aerial blasting: theories and contraptions.
Dombroski, R., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.69-71, 2 refs.
Avalanche triggering, Explosives, Countermeasures, Detonation waves.

42-770
Recent developments of snow moisture dielectric devices.
Denoth, A., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.72-76, 10 refs.
Foglar, A.
Snow water content, Unfrozen water content, Snow electrical properties, Dielectric properties, Measuring instruments, Tests.

42-771
Avalanche defense systems in the starting zone.
Lazard, A.J., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.77-78.
Avalanches, Warning systems, Countermeasures, Protection.

42-772
Sensor frequency, wave guide orientation and type, and their influence on acoustic emission monitoring of snow pack stability.
Watters, R.J., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.81-85, 4 refs.
Swanson, K.
Snow cover stability, Acoustic measurement, Acoustics, Snow creep, Snow loads, Monitors, Snow density, Avalanche formation.

42-773
Seasonal snow cover monitoring using FMCW radar.
Gubler, H., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.87-97, 4 refs
Weilenmann, P.
Snow stratigraphy, Snow cover distribution, Snow water equivalent, Radar echoes, Avalanche formation, Seasonal variations, Meltwater, Monitors, Snow water content, Spectra.

42-774
On the metamorphism, morphology and microstructure of snow.
Perla, R., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.98-102, 17 refs.
Sommerfeld, R.A.
Metamorphism (snow), Snow morphology, Microstructure, Snow cover structure, Temperature gradients, Snow crystal growth, Phase transformations.

42-775
Local transformations to simulate two dimensional dendritic crystal growth.
Good, W., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.103-107, 12 refs.
Snow crystal growth, Dendritic ice, Ice crystal growth, Computer programs, Models.

42-776
Instrumentation of avalanche loads, East Riverside avalanche path, Colorado.
Mears, A.I., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.108-110.
Avalanche formation, Loads (forces), Avalanche tracks, Impact strength, Strains, Velocity, Countermeasures, Protection.

42-777
Three dimensional dynamic model of turbulent avalanche flow.
Tesche, T.W., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.111-137, Refs. p.132-137.
Avalanche mechanics, Avalanche modeling, Turbulent flow, Mathematical models, Avalanche tracks, Air entrainment.

42-778
Avalanches of snow from roofs of buildings.
Paine, J., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.138-142, 2 refs.
Bruch, L.
Avalanche formation, Roofs, Snow mechanics, Buildings, Design, Countermeasures, Protection, Snow accumulation, Analysis (mathematics).

42-779
Low cost determination of snow accumulation.
Wagner, N.R., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA ISSW Workshop Committee, [1987], p.143-145, 2 refs.
Snow depth, Acoustic measurement, Snow accumulation, Measuring instruments, Tests, Snow surface, Snowfall, Snowdrifts.

42-780
How ground temperature affects temperature gradient metamorphism—an empirical study.
Tremper, B., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.146-152, 6 refs.
Metamorphism (snow), Soil temperature, Temperature gradients, Avalanche formation, Snow compaction, Soil temperature, Seasonal variations, Interfaces.

42-781
Widespread cycle of unusual avalanche events.
Wilson, N.A., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.153-154.
Avalanche formation, Damage, Snow accumulation, Trees (plants), Buildings, Temperature effects, Impact strength, Mountains, Wind factors.

42-782
Alpine meadows avalanche rescue dog program.
Maddox, J., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.155-160.
Avalanche formation, Rescue operations, Animals, Detection.

42-783
Canadian Avalanche Association.
Schaerer, P.A., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.161-163.
Avalanches, Organizations, Safety, Rescue operations, Accidents.

42-784
Frequency choice for avalanche beacons.
Straumfjord, D., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.168-171, 7 refs.
Avalanche formation, Rescue operations, Accidents, Detection, Temperature effects.

42-785
Standard frequency for avalanche beacons—what's going on in Europe.
Meier, F., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.172-176, 8 refs.
Avalanche formation, Warning systems, Safety, Equipment, Accidents.

42-786
Electronic transceivers for locating avalanche victims, an optical strategy for the primary search.
Good, W., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.177-182, 9 refs.
Detection, Avalanche formation, Accidents, Rescue operations, Indicating instruments, Safety, Electronic equipment.

42-787
Chinook Pass avalanche control program.
Wilbour, C.R., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.195-200, 1 ref.
Avalanche formation, Snow cover structure, Safety, Countermeasures, Seasonal variations, Wet snow, Protection.

42-788
Research and development pertaining to steel wire rope net systems for the prevention of snow avalanches.
Thommen, R.A., Jr., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.201-206, 1 ref.
Avalanche formation, Countermeasures, Structures, Supports, Design.

42-789
The Swiss "Rutschblock" snow stability evaluation test.
Whitmore D., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.207-209, 6 refs.
Burak, S.A., Malone, J., Davis, R.E.
Snow cover stability, Shear properties, Slope stability, Tests, Loads (forces), Skis.

42-790
***In-situ* strength measurements of the snowpack.**
Rosso, R.S., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.210-215, 12 refs.
Avalanche formation, Snow strength, Shear strength, Tensile properties, Tests, Snow depth.

42-791
Growth characteristics of hoarfrost with respect to avalanche occurrence.
Breyfogle, S.R., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.216-222, 10 refs.
Avalanche formation, Hoarfrost, Ice crystal growth, Air temperature.

42-792
Spatial and temporal aspects of the snow avalanche hazard, Glacier National Park, Montana, U.S.A.
Butler, D.R., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.223-230, 50 refs.
Avalanche formation, Accidents, Damage, Statistical analysis, United States—Montana—Glacier National Park.

42-793
Global snow studies utilizing microwave radiometry.
Foster, J.L., et al, International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.231-233, 7 refs.
Hall, D.K., Chang, A.T.C.
Snow hydrology, Radiometry, Remote sensing, Snow cover distribution, Microwaves, Snow depth.

42-794
Experimental analysis in wind profile at the ground layer of stable air and motion state and deposition of snow in the wind drift snow current.
Chi, G., International Snow Science Workshop, Lake Tahoe, CA, Oct. 22-25, 1986. Proceedings. Merging of theory and practice, Homewood, CA, ISSW Workshop Committee, [1987], p.234-239, 15 refs.
Snowdrifts, Wind velocity, Snow accumulation, Air flow, Seasonal variations, Analysis (mathematics), Shear stress, Topographic features.

42-795
Local ice impact pressures measured in summer multiyear ice in the Beaufort Sea (1984).
Daley, C., et al, *Transport Canada. Report,* Sep. 1986, TP 7924E, 20p. + append., 5 refs.
St. John, J.W., Brown, R., Meyer, J., Glen, I.
Ice pressure, Impact strength, Ice loads, Tests, Design criteria, Icebreakers, Statistical analysis, Beaufort Sea.

42-796
Consolidation of local ice impact pressures measured aboard USCGC *Polar Sea* (1982-1984).
Daley, C., et al, *Transport Canada. Report,* Sep. 1986, TP 8533E, 50p. + append., With French summary. 42 refs.
St. John, J.W., Brown, R., Glen, I.
Ice pressure, Ice loads, Impact strength, Sea ice, Ice conditions, Design criteria, Icebreakers, Ships.
This report presents a consolidation of local pressure measurements made over a 3 year period, on the USCGC *Polar Sea,* in both Arctic and Antarctic waters. A panel in the bow of the vessel contains instrumentation capable of recording ice pressures during an impact. During the 3 years, 3680 ice impact events have been recorded. The report presents an analysis of the forces and pressures measured and makes recommendations for iceworthy ship design criteria. Five appendices contain detailed information on the data, statistical analysis and design criteria. Ice pressures depend mainly on ice severity and not on ship mass or velocity. The pressure/area effect appears to be influenced by strain rate. Extreme pressures tend to follow a Frechet (Type II) distribution for the most severe forms of ice. Further collection of ice loads is appropriate, due to the statistical nature of the phenomena. Investigation of the plastic behavior of icebreaker scantlings is recommended.

42-797
Development of a 69 kV high-pressure gas-filled pipe-type cable system for an arctic environment.
Silver, D.A., et al, *IEEE transactions on power delivery,* Jan. 1986, 1(1), p.41-50, Includes discussion and authors' reply. 6 refs.
Seman, G.W., Buckweitz, M.D., Walker, J.J.
Power lines, Pipes (tubes), Thermal insulation.

42-798
Engine oil low-temperature pumpability: a comparison of SAE 10W30, 5W30, and 0W30 multigrade engine oils.
May, C.J., et al, *Lubrication engineering,* July 1987, 43(7), p.557-567, 28 refs.
Habeeb, J.J., White, A.M.
Lubricants, Engines.

42-799
Diffusive transport of light in sea ice.
Trodahl, H.J., et al, *Applied optics,* Aug. 1, 1987, 26(15), p.3005-3011, 20 refs.
Buckley, R.G., Brown, S.
Ice optics, Sea ice, Light transmission, Diffusion.

42-800
Field and laboratory investigations on river ice cover and hanging dam formation.
Ruggles, R.W., Potsdam, N.Y., Clarkson University, 1986, 171p., University Microfilms order No.8626414, Ph.D. thesis. 27 refs. For abstract see Dissertation abstracts international, Sec. B, Feb. 1987, p.3458.
River ice, Ice dams, Ice formation, Ice cover thickness, Flow rate, Ice volume, Velocity, Analysis (mathematics), Channels (waterways).

42-801
Ice atlas, 1984-1985: Ohio River, Allegheny River, Monongahela River.
Gatto, L.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1986, SR 86-23, 185p.
Daly, S.F., Carey, K.
River ice, Maps, Ice conditions, Ice navigation, United States—Ohio River, United States—Pennsylvania—Allegheny River, United States—Monongahela River.
Ice conditions on inland rivers can change rapidly and adversely affect navigation. The ice maps in this atlas were prepared to document the 1984-85 ice conditions on those reaches of the Ohio, Allegheny and Monongahela Rivers that are included in study areas for the River Ice management (RIM) Program, namely river mile 0 to 437 on the Ohio River, mile 0 to 7 on the Allegheny, and mile 0 to 66 on the Monongahela. The maps were prepared from interpretation of vertical aerial video imagery taken from a low-flying aircraft. The interpreted ice conditions were classified into 5 units and transferred to base maps by reference to navigation charts and topographic maps. Fragmented Ice Cover and Ice Floes or Frazil Slush and Pans were the most common ice units in the lower pools of the Monongahela River and lower Allegheny. Solid Ice Cover and Fragmented Ice Cover were the most common units in the upper pools of the Monongahela. Fragmented Ice Cover and Open Water were the most extensive units in the Emsworth to New Cumberland pools of the Ohio; Open Water and Ice Floes or Frazil Slush and Pans were the predominant units in the downstream pools. There were frequent cancellations of flights during the 1984-85 winter because of low cloud ceilings. To get more frequent video coverage of ice during the 1985-86 winter, a wider-angle lens on the video camera will be used. This will allow flights at a lower altitude, permitting video coverage even when the ceiling is low.

42-802
Surface disposal experiment of waste drilling fluids, Hoodoo N-52 well Ellef Ringnes Island, N.W.T. Initial report: phase one.
French Arctic Consultants, Ltd., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Mar. 1982, APOA 187-1, 76p., Refs. p.69-71.
Waste disposal, Drilling fluids, Permafrost distribution, Environmental impact, Soil pollution, Experimentation, Surface properties, Seasonal variations, Ground ice, Canada—Northwest Territories—Ellef Ringnes Island.

42-803
Surface disposal experiment of waste drilling fluids, Hoodoo N-52 well Ellef Ringnes Island, N.W.T. Phase two report.
French Arctic Consultants, Ltd., *Arctic Petroleum Operators Association, Calgary, Alta. Report,* Dec. 1982, APOA 187-2, 57p., 14 refs.
Waste disposal, Drilling fluids, Soil pollution, Environmental impact, Chemical analysis, Experimentation, Design, Surface properties, Canada—Northwest Territories—Ellef Ringnes Island.

42-804
Rating unsurfaced roads—a field manual for measuring maintenance problems.
Eaton, R.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1987, SR 87-15, 34p. ADA-185 621.
Gerard, S., Cate, D.W.
Road maintenance, Surface roughness, Drainage, Trafficability, Pavements, Manuals.

42-805
Science of snow and ice, Pt.8. [Yuki to kori no kagaku: 8],
Inoue, M., *Snow and road (Yuki to doro),* Apr. 1987, No.11, p.7-10, In Japanese.
Roads, Embankments, Snowmelt, Temperature effects, Slope orientation, Sunlight, Wind direction.

42-806
On the 8th 5-Year Plan on Snow and Cold Climate in Tohoku region. [Tohoku chiken no dai 8-ji sekkan 5 kanen keikaku ni tsuite],
Endo, I., et al, *Snow and road (Yuki to doro),* Apr. 1987, No.11, p.23-27, In Japanese.
Ikeda, K.
Road maintenance, Snow removal, Winter maintenance, Japan—Tohoku.

42-807
Aiming at building a prefecture free from snow damage: at the beginning of the last year of the present 5-Year Plan on Snow and Cold Climate. [Setsugai no nai kendo zukuri o mezashite: genko sekkan 5 kanen keikaku no saishunen ni atatte],
Land-Use Planning Section, Toyama Prefecture, *Snow and road (Yuki to doro),* Apr. 1987, No.11, p.28-34, In Japanese.
Heat pipes, Road maintenance, Hot springs, Snow removal, Snowsheds, Pavements, Snow fences, Water pipes, Japan—Toyama Prefecture.

42-808
Winter snow removal system in Asahikawa. [Asahikawa-shi: fuyu no josetsu taisei],
Tamura, T., *Snow and road (Yuki to doro)*, Apr. 1987, No.11, p.35-41, In Japanese.
Heat pipes, Road maintenance, Sidewalks, Snow removal, Pavements, Water pipes, Wells, Japan—Asahikawa.

42-809
Measures presently in use against highway snow and ice. [Kosoku doro ni okeru seppyo taisaku no genkyo],
Murakuni, M., *Snow and road (Yuki to doro)*, Apr. 1987, No.11, p.42-46, In Japanese.
Road icing, Road maintenance, Highway planning, Snow fences.

42-810
Snow removal and snow cover distribution in Akita Prefecture. [Akita-ken no doro josetsu jokyo to kosekisesshin no bunpu],
Ito, T., et al, *Snow and road (Yuki to doro)*, Apr. 1987, No.11, p.47-51, 4 refs., In Japanese.
Umemori, A., Yanagisawa, T.
Snow depth, Snow cover distribution, Road maintenance, Snow removal, Japan—Akita Prefecture.

42-811
Nagano-ken Iiyama Construction Office—snow conquering measures in northern Shinano. [Nagano-ken Iiyama Kensetsu Jimusho—Kitashinano-ji no kokusetsu taisaku ni tsuite],
Nakamura, A., et al, *Snow and road (Yuki to doro)*, Apr. 1987, No.11, p.68-73, In Japanese.
Aburai, H.
Snow removal, Road maintenance, Pavements, Water pipes, Wells.

42-812
Device to melt accumulated snow in front of garages in Nagaoka New Town. [Nagaoka nyu taon shako mae shosetsu shitsetsu],
Takizawa, T., *Snow and road (Yuki to doro)*, Apr. 1987, No.11, p.74-76, In Japanese.
Snow melting, Snow removal, Sprinklers, Wells, Japan—Nagaoka.

42-813
Development of a machine for roadside snowbank removal. [Rosoku settei shori kikai no kaihatsu],
Abe, T., *Snow and road (Yuki to doro)*, Apr. 1987, No.11, p.77-83, In Japanese.
Snow removal, Embankments.

42-814
Problems of global glaciation during the Quaternary.
Danilov, I.D., *Polar geography and geology*, Apr.-June 1987, 11(2), p.127-140, Translation of Timiriazevskaia Sel'skokhoziaistvennaia Akademiia. Izvestiia, No. 1: 109-116, 1984.
Pleistocene, Ice cores, Paleoclimatology, Glaciation.
The validity of earlier attempts at squeezing global Pleistocene glacial events into the mold of the "four glaciation" Alpine model is questioned and additional criticism is made of the recent trend to expand the number of Pleistocene glaciation even further. It is pointed out that ice core data from both Greenland and Antarctica suggest that there has been a progressive global climatic cooling throughout the whole of the late Cenozoic, provoked by a reduction in size of ocean areas and an increase in the areas and heights of the continents. This cooling trend reached a maximum in the late-Quaternary (30,-000 to 20,000 B.P. approximately), which was associated with a marine regression which caused the isolation and severe cooling of the Arctic Ocean. This in turn provoked a drastic cooling of the climates of the adjacent continents and initiated a limited glaciation. Ice cap formation was on much more restricted scale than has been conventionally proposed for the Pleistocene glaciations. On the other hand permafrost was very extensive on the Northern Hemisphere continents, the ratio of glacier area to permafrost area being about 1:10. The area of sea ice cover in the North Atlantic and North Pacific also expanded considerably. (Auth.)

42-815
Study of ice movements in the Arctic Ocean using FGGE automatic buoys.
Gorbunov, IU.A., et al, *Polar geography and geology*, Apr.-June 1987, 11(2), p.141-148, For Russian original see 41-4202. 15 refs.
Kulakov, I.IU., Losev, S.M.
Sea ice, Drift, Remote sensing, Ocean currents, Drift stations.

42-816
Some peculiarities of ice movements in the Arctic Basin based on data from FGGE automatic buoys.
Losev, S.M., et al, *Polar geography and geology*, Apr.-June 1987, 11(2), p.149-161, For Russian original see 41-4199. 10 refs.
Gorbunov, IU.A., Kulakov, I.IU.
Remote sensing, Sea ice, Drift, Ocean currents, Drift stations.

42-817
Large-scale ice strength tests, 1980/81.
Lecourt, E.J., et al, Columbia, MD, ARCTEC, Inc., July 1982, 3 vols. + 5 vols. of appends., Refs. passim.
Benze, D.L., Toeneboehn, J.G., Reid, A.H.
Ice strength, Ice pressure, Compressive properties, Sea ice, Ice deformation, Tests, Loads (forces), Computer programs, Measuring instruments, Equipment, Strains, Photography.

42-818
Some optical properties of blowing snow.
Seagraves, M.A., *U.S. Army. Electronics Research and Development Command. Atmospheric Sciences Laboratory. Report*, June 1981, ASL-TR-0091, 40p., ADA-103 268, 162 refs.
Snow optics, Blowing snow, Aerosols, Attenuation, Visibility, Analysis (mathematics), Snow mechanics, Particle size distribution.

42-819
Measurements of radar backscatter from Arctic sea ice in the summer.
Onstott, R.G., et al, *Kansas. University. Center for Research. Remote Sensing Laboratory. Technical report*, July 1981, RSL-TR-331-20, 12p. ADA-105 586.
Gogineni, S., Delker, C.V., Moore, R.K.
Sea ice distribution, Ice conditions, Radar echoes, Backscattering, Ice cover thickness, Pressure ridges, Seasonal variations.

42-820
Use of radar data on precipitation to evaluate cloud-seeding results.
Koloskov, B.P., et al, *Soviet meteorology and hydrology*, 1987, No.2, p.13-19, Translated from Meteorologiia i gidrologiia. 11 refs.
Mel'nichuk, IU.V., Shipilov, O.I.
Radar echoes, Artificial nucleation, Artificial precipitation, Cloud seeding, Experimentation, Data processing, Statistical analysis.

42-821
Express analysis of satellite radar images of sea ice.
Krasiuk, V.S., et al, *Soviet meteorology and hydrology*, 1987, No.2, p.59-63, Translated from Meteorologiia i gidrologiia. 5 refs.
Nazirov, M., Nikitin, P.A., Bukhman, E.V.
Radar photography, Sea ice, Drift, Spaceborne photography, Antarctica—Ross Sea.
Methods and possibilities of digital processing of operationally incoming satellite data are discussed using the radar images of drift ice in the Ross Sea, obtained from the Kosmos-1500 satellite. The application of interactive processing methods for express analysis increases reliability and decreases ambiguity.

42-822
Characteristics of icing of the western zone of BAM development according to aerial and satellite data.
Abakumenko, A.E., *Soviet meteorology and hydrology*, 1987, No.2, p.72-76, Translated from Meteorologiia i gidrologiia. 3 refs.
Maps, Ice accretion, Ice conditions, Naleds, Water reserves, Mapping, River basins, Topographic effects, Drainage.

42-823
Science of snow and ice: Pt.9. [Yuki to kori no kagaku: 9],
Inoue, M., *Snow and road (Yuki to doro)*, July 1987, No.12, p.7-11, In Japanese.
Ice physics, Ice friction, Road icing.

42-824
Effects of antifreeze (snow melting agent) in Hokkaido. [Hokkaido ni okeru toketsu boshizai (yusetsuzai) no koka ni tsuite],
Kadoyama, Y., et al, *Snow and road (Yuki to doro)*, July 1987, No.12, p.44-48, In Japanese.
Hayashi, N.
Salting, Tires, Rubber snow friction, Rubber ice friction, Japan—Hokkaido.

42-825
Melting of snow using a non-sprinkler type method on Tohoku Throughway. [Tohoku Jidoshado no musansui shosetsu],
Araki, S., *Snow and road (Yuki to doro)*, July 1987, No.12, p.49-55, In Japanese.
Concrete pavements, Geothermal thawing, Pavements, Water pipes, Springs (water), Japan—Sakanashi Tunnel.

42-826
Policy on studded tires in Miyagi Prefecture. [Miyagi-ken ni okeru spaiku taiya taisaku ni tsuite],
Miyagi Prefecture. Health and Environment Division. Environmental Management Section, *Snow and road (Yuki to doro)*, July 1987, No.12, p.56-59, In Japanese.
Tires, Japan—Miyagi Prefecture.

42-827
Development of a self-propelled transport vehicle that disposes snow/water mixture via hose. [Jisoshiki yuki-mizu kongo paipu yusoki no kaihatsu],
Sai, T., *Snow and road (Yuki to doro)*, July 1987, No.12, p.60-63, In Japanese.
Sidewalks, Snow removal, Trenching.
A newly developed treaded vehicle (model) that mixes sidewalk snow with water syphoned up from roadside trenches. Running water in trench washes snow away when accumulated snow is thrown into it. Snow/water mixture is returned to the trench via a return hose.

42-828
Securing winter transportation for the vitalization of urban activities—the case of Joetsu, Niigata Prefecture, a model city. [Toshi kino kasseika no tame no toki kotsu kakuho ni tsuite—Niigata-ken Joetsu-shi o moderu to shita bai],
Ito, S., *Snow and road (Yuki to doro)*, July 1987, No.12, p.64-68, 1 ref., In Japanese.
Snow removal, Winter maintenance, Japan—Joetsu.

42-829
Snow countermeasures at Rausu Pass—securing a regional lifeline. [Rausu-toge no bosetsu taisaku—chiiki no seimeisen no kakuho ni muketei],
Kuwajima, T., *Snow and road (Yuki to doro)*, July 1987, No.12, p.69-74, In Japanese.
Transportation, Blowing snow, Snow removal, Snowsheds, Snow fences, Protective vegetation, Japan—Rausu Pass.

42-830
Changes in techniques of snow removal. [Shosetsuho no utsuri kawari],
Katsuragi, K., *Snow and road (Yuki to doro)*, July 1987, No.12, p.75-77, In Japanese.
Snow removal, Salting, Sprinklers, Pavements, Heat pipes, Water pipes, Solar radiation, Ground water.
Section 5. Utilization of the space under pavement as solar heat reservoir by heating underground water during summer is proposed as a new technique in the 21st century. By using underground water thus warmed for pavement heating, snow will be more effectively melted and will result in saving of water. Lowering of water table would be prevented at the same time.

42-831
Role of the National Science Foundation in polar regions.
U.S. National Science Board. Task Committee on NSF's Role in Polar Regions, Washington, D.C., June 1987, 57p., NSB-87-128, Refs. passim.
Research projects, Polar regions, Organizations, Ice cover, Sea ice.
This report was prepared on the basis of oral presentations and written background information from experts representing various fields of polar research and organizations concerned with such research. Included in the Committee review are scientific needs and opportunities in meteorology and climate, ocean sciences, earth sciences, glaciology, upper atmosphere research and astronomy, biology and ecology, medicine and health, behavioral and social sciences, and engineering. Consideration is given to the impact of international, national, and state policies and interests on the nature and conduct of polar research, as well as to implications of legal, environmental, and industrial concerns for polar science and engineering. Logistic requirements for effective U.S. research programs in the Arctic and the Antarctic are examined, as are trends in the financial support of polar research. Differences between the Arctic and the Antarctic influencing the conduct of research in these regions are examined. Specific recommendations are offered to assist the National Science Foundation in fulfilling its primary responsibility for polar science and to strengthen U.S. research and presence in the polar regions.

42-832
Growth, structure and disintegration of Arctic ice shelves.
Jeffries, M.O., *Polar record*, Sep. 1987, 23(147), p.631-649, 64 refs.
Ice shelves, Ice islands, Ice growth, Calving, Arctic Ocean, Canada—Northwest Territories—Ellesmere Island.

42-833
Bioclimatic index of human survival times in the Antarctic.
De Freitas, C.R., et al, *Polar record*, Sep. 1987, 23(147), p.651-659, 30 refs.
Symon, L.V.
Climatic factors, Cold weather survival.
An index of human 'survival time outdoors in extreme cold' (STOEC) has been developed, using body-atmosphere energy budget modelling procedures. The index, which is applicable in places like Antarctica where only limited climatological data are available, is based on the calculated rate of fall of core temperature from 37 C to 27 C of a standard inactive healthy subject in full polar clothing. Applied to data from 12 antarctic stations it indicates relative severity of their mean and extreme climatic conditions. The severest winter conditions become life-threatening after only about 20 minutes. At most stations in winter, exposure outdoors for more than two hours would be dangerous. Conditions at all coastal stations in summer are

mild enough to allow a normal core temperature to be maintained. The index has many applications, for example estimating likely survival times of immobilized accident victims and guidelines for duration of work periods outside. (Auth.)

42-834

Protected area marker for polar use.

Fleming, A.J., et al, *Polar record*, Sep. 1987, 23(147), p.716-718, 2 refs.

Keage, P.L.

Markers, Environmental protection.

A protected area marker prototype has been developed by the Australian Antarctic Division from a Canadian reserve boundary marker. The canister is a 125 mm x 400 mm welded (agricultural) aluminium tube section with a 19 mm thick aluminium cap; the stepped lip of the cap is machined to take a 'nitrile' rubber sealing ring. The base of the canister is a 10 mm thick aluminium plate, press-fitted and sealed with epoxy glue, and attached to an aluminium scaffold tube (48 mm outside diameter, 39 mm inside) by a threaded one-and-a-quarter inch BSPS mild steel sleeve. The sleeve screws into the bottom plate, which has a concave inside floor. Thus any moisture entering the canister drains to the inside of the scaffold section. Guys are attached to 3 lugs on a steel collar bolted just below the threaded sleeve. The marker is expected to withstand winds in excess of 150 knots. A powdered epoxy anti-corrosion paint is baked onto the canister or the complete marker. A sketch of the marker is included. (Auth.)

42-835

New health register for Australian National Antarctic Research Expeditions.

King, H., *Polar record*, Sep. 1987, 23(147), p.719-720, 4 refs.

Health, Polar regions, Antarctica.

The aims of the ANARE Health Register are to quantify the occurrence of ill health in antarctic personnel, to compare incidence rates with those of the domestic population, to assess temporal, seasonal and occupational trends, and to identify high-risk groups. At present descriptive, the project will in time provide a data base for generating and testing hypotheses, and for assessing the value of future public health measures. Data are collected in three stages which are described as to what information is collected at which stages and how the data are used and by whom. (Auth. mod.)

42-836

Accidents on Australian antarctic expeditions.

Lugg, D., et al, *Polar record*, Sep. 1987, 23(147), p.720-725, 9 refs.

Gormley, P., King, H.

Health, Accidents, Antarctica.

During the period of analysis Australian expeditioners experienced 1301 injury occurrences, of which 1205 (92.6%) are classed as minor trauma, 39 (3.0%) major trauma, and 57 (4.4%) environmental. Overall, this amounts to about one injury/expeditioner/year. It is estimated that annual alcohol consumption among ANARE personnel amounts to 16.3 liters/head. Alcohol is implicated in about 7% of all accidents over the period.

42-837

Carbon dioxide effects research and assessment program.

Beatty, N.B., ed, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, 546p., DE82-016 633, DOE/CONF-8106214, For selected papers see 42-838 through 42-843 or F-36498, F-36499 and I-36497.

Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981.

Climatic changes, Carbon dioxide, Snow cover effect, Ice cover effect, Meetings, Solar radiation, Ocean environments, Marine biology.

Scientists are agreed that the global mean carbon dioxide concentration in the atmosphere is increasing at the rate of about 1.0 to 1.5 parts per million per year. In order to develop a program on the first detection of the effects of increased CO2 concentration, the best available scientists were engaged to point the way. To accomplish this, a Workshop sponsored by the U.S. Department of Energy was held at the Cliffside Motor Inn, Harpers Ferry, West Virginia, June 8-10, 1981. Four areas were examined: the atmosphere, the polar regions, the oceans, and the biosphere. Papers were commissioned for presentation in each of these areas, and other relevant papers were also included. In addition, four panels were set up, one in each of these areas, to discuss the papers and other relevant material. All the papers and the panel reports are included in this volume. Three are pertinent to Antarctica.

42-838

Report on the Polar Panel.

Fletcher, J.O., et al, Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981. Proceedings. Carbon dioxide effects research and assessment program. Edited by N.B. Beatty, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, p.197-205. DOE/-CONF-8106214; DE82-016 633.

Boville, B.W.

Climatic changes, Carbon dioxide, Snow cover effect, Ice cover effect, Sea ice, Solar radiation, Albedo, Mass balance, Detection, Monitors.

Discussions of detection of CO2 effects in the polar regions are presented in 3 phases: monitoring of CO2 concentrations—in particular the seasonal variation comparisons between the Arctic and the Antarctic, radiative effects of changing CO2, and early indicators of climatic variation. Descriptions of each phase, with a list of recommendations for effective control measures, are offered.

42-839

Snow and ice indicators of possible climatic effects of increasing atmospheric carbon dioxide.

Barry, R.G., Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981. Proceedings. Carbon dioxide effects research and assessment program. Edited by N.B. Beatty, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, p.207-236, DOE/CONF-8106214; DE82-016 633, Refs. p.231-236.

Climatic changes, Snow cover effect, Ice cover effect, Carbon dioxide, Atmospheric composition, Distribution, Greenland.

Studies of the general problem of possible snow and ice responses to carbon dioxide-induced warming are reviewed; the components of the cryosphere are summarized. Types of CO2 effects on the cryosphere are discussed, and characteristics of snow and ice parameters and factors involved in their variability are shown in a table. On the basis of present knowledge, it is suggested that a CO2-induced warming on the century time scale will have only minor consequences for ice sheets and ground ice or permafrost. Changes in sea ice concentrations, however, may be anticipated on the 10- to 50-year time scale; a possible decreasing trend in antarctic sea ice extent warrants careful monitoring. Recommendations to this effect are included.

42-840

Carbon dioxide in polar climates.

Kukla, G.J., Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981. Proceedings. Carbon dioxide effects research and assessment program. Edited by N.B. Beatty, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, p.237-288, DOE/CONF-8106214; DE82-016 633, Refs. p.280-288.

Climatic changes, Carbon dioxide, Snow cover effect, Ice cover effect.

42-841

Rise of global mean sea level as an indication of climatic change.

Etkins, R., et al, Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981. Proceedings. Carbon dioxide effects research and assessment program. Edited by N.B. Beatty, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, p.343-359, DOE/CONF-8106214; DE82-016 633, 20 refs.

Epstein, E.S.

Ice melting, Sea level, Climatic changes, Temperature variations, Water temperature, Analysis (mathematics).

Rising mean sea level, it is proposed, is a significant indication of global climate change. Calculations indicate that thermal expansion alone cannot explain the observed rise in sea level over the last 40 years; significant discharges of polar ice must be occurring. During the past 40 years more than 50,000 cubic kilometers of ice have been discharged and have melted, reducing the surface warming that might otherwise have occurred by as much as a factor of two. The transfer of mass from the polar regions to a thin spherical shell covering all the oceans should have increased the earth's moment of inertia and correspondingly reduced the speed of rotation by about 1.5 parts in 100 million. This accounts for about three quarters of the observed fractional reduction in the earth's angular velocity since 1940. Monitoring of global mean sea level, ocean-surface temperatures, and the earth's speed of rotation should be complemented by monitoring of the polar ice sheets such as is now possible by satellite altimetry. (Auth. mod.)

42-842

Detection of the first ecological effects in polar tundra regions resulting from an increase in atmospheric carbon dioxide concentration: suggestions for research.

Miller, P.C., Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981. Proceedings. Carbon dioxide effects research and assessment program. Edited by N.B. Beatty, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, p.459-502, DOE/CONF-8106214; DE82-016 633, Refs. p.498-502.

Tundra, Permafrost, Carbon dioxide, Climatic changes, Biomass, Detection, Ecosystems, Distribution, Ecology.

42-843

Measurement of climatic changes caused by the increase in atmospheric carbon dioxide: the role of the biota.

Woodwell, G.M., et al, Workshop on First Detection of Carbon Dioxide Effects, Harpers Ferry, WV, June 8-10, 1981. Proceedings. Carbon dioxide effects research and assessment program. Edited by N.B. Beatty, Washington, D.C., U.S. Dept. of Energy, Office of Energy Research, 1981, p.533-540, DOE/-CONF-8106214; DE82-016 633, 14 refs.

Houghton, R.A.

Ecology, Climatic changes, Ice cover effect, Sea ice distribution, Air temperature, Water temperature, Sea water, Sea level, Albedo.

42-844

Weather modification programme.

WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985, *World Meteorological Organization. Technical document*, 1985, WMO/TD-No.53, 2 vols. (685p.), Refs. passim. For selected papers see 42-845 through 42-894.

Weather modification, Cloud seeding, Ice crystal growth, Cloud physics, Snowfall, Supercooled clouds, Nucleating agents, Meetings, Precipitation (meteorology), Mountains.

42-845

Aggregates: the role of crystal habit.

Rauber, R.M., *World Meteorological Organization. Technical document*, 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.17-22, 9 refs.

Supercooled clouds, Snowfall, Snowflakes, Ice crystal formation, Precipitation (meteorology), Ice crystal structure.

42-846

Growth of snowflakes by riming and aggregation over warm fronts.

Matsuo, T., et al, *World Meteorological Organization. Technical document*, 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.23-28, 5 refs.

Sakakibara, H., Tanaka, T.

Snowflakes, Unfrozen water content, Hoarfrost, Precipitation (meteorology), Weather forecasting, Rain, Temperature effects, Particle size distribution.

42-847

Ice multiplication conditions in natural clouds.

Brenguier, J.L., *World Meteorological Organization. Technical document*, 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.35-40, 7 refs.

Ice crystal growth, Supercooled clouds, Ice nuclei, Temperature effects, Profiles, Distribution.

42-848

Examination of selection mechanisms operating during precipitation formation.

Lamb, D., et al, *World Meteorological Organization. Technical document*, 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.41-44, 12 refs.

Pitter, R.L.

Cloud seeding, Precipitation (meteorology), Solid phases, Ice crystals, Ice formation, Snowfall, Artificial ice.

42-849

Trajectories of ice crystals through the upper levels of an orographic cloud and resulting calculations of ice mass in the cloud.

Uttal, T., et al, *World Meteorological Organization. Technical document*, 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.45-50, 6 refs.

Rauber, R.M., Grant, L.O.

Ice crystal growth, Supercooled clouds, Phase transformations, Weather modification, Mountains, Water content, Ice crystal structure.

42-850
Distribution of liquid, vapor and ice in the upper levels of an orographic cloud system: total water budget from field observations.
Uttal, T., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.51-54, 3 refs.
Grant, L.O., Rauber, R.M.
Supercooled clouds, Ice crystals, Water vapor, Unfrozen water content, Distribution, Mountains, Water supply.

42-851
Wind tunnel study on the accretional growth of snowflakes: implications for precipitation enhancement.
Rasmussen, R.M., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.55-60, 11 refs.
Lew, J.K.
Snowflakes, Snow accumulation, Wind tunnels, Cloud seeding, Precipitation (meteorology), Ice crystal growth, Weather modification.

42-852
Studies of ice crystals for weather modification.
Wang, A., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.61-64, 9 refs.
Weather modification, Nucleating agents, Ice crystal growth, Temperature effects.

42-853
Study of the basic mechanism of cumulonimbus organized electrization by affecting their electrical state.
Imianitov, I.M., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.65-70, 10 refs.
Stepanenko, V.D., Kartsivadze, A.I., Kachurin, L.G.
Cloud physics, Electric charge, Cloud seeding, Ice crystal growth, Weather modification, Precipitation (meteorology), Nucleating agents.

42-854
Precipitation formation in dry ice seeding plumes.
Rodi, A.R., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.71-76, 6 refs.
Heymsfield, A.J., Prasad, N.
Cloud seeding, Dry ice (trademark), Ice crystal growth, Precipitation (meteorology), Snowflakes, Models, Temperature effects, Carbon dioxide.

42-855
Evolution of hydrometeor size distributions in seeded Alberta summertime cumulus clouds.
Kochtubajda, B., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.77-80, 4 refs.
Cloud seeding, Ice crystal growth, Cloud physics, Precipitation (meteorology), Rain, Nucleating agents, Temperature effects.

42-856
Density variations during soaking of porous accreted ice and implications in hail formation and suppression.
Prodi, F., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.85-88, 6 refs.
Ice accretion, Hailstone growth, Hail prevention, Porosity, X ray analysis, Ice density, Hailstone structure.

42-857
Study of two hail processes in Bulgaria.
Stoianov, S., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.89-96, 16 refs.
Hailstone structure, Hail prevention, Radio echo soundings.

42-858
Hailstone microphysics researches in China.
Li, Z., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.97-102, 1 ref.
Shi, W., Zheng, G.
Hailstone growth, Hail prevention, Hailstone structure, Heat balance, Velocity, Temperature effects.

42-859
Models of hailstorms and their application on hail suppression.
Wang, A., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.115-120, 21 refs.
Xu, N.
Hailstones, Hail prevention, Hail clouds, Cloud seeding, Air flow, Storms, Precipitation (meteorology).

42-860
Seeded precipitation formation in stratiform clouds—numerical simulation results.
Bakhanov, V.P., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.135-140.
Pirnach, A.M., Manzhara, A.A., Dorman, B.A.
Cloud seeding, Ice crystal growth, Cloud physics, Wind factors, Nucleating agents, Supercooled clouds, Models, Precipitation (meteorology).

42-861
Remote sensing and model simulation of microphysical and physical properties of clouds.
Wu, M.-L.C., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.141-145, 15 refs.
Cheng, C.-P.
Cloud physics, Remote sensing, Ice crystal growth, Solar radiation, Models, Thermodynamics, Temperature effects.

42-862
Simulation of orographic snowfall over the northern Colorado Rockies—a blind simulation experiment.
Cotton, W.R., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.147-148, 3 refs.
Mulvihill, E., Tripoli, G., Rauber, R.
Snowfall, Ice crystals, Cloud seeding, Forecasting, Mountains, Models, Wind velocity.

42-863
Role of microwave radiometry in weather modification research.
Heggli, M.F., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.157-162, 11 refs.
Weather modification, Snowfall, Radiometry, Infrared photography, Microwaves, Mountains, Unfrozen water content.

42-864
Ground based optical array probe to investigate the effects of cloud seeding.
Humphries, J.H., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.169-174, 8 refs.
Cloud seeding, Snowflakes, Nucleating agents, Measuring instruments, Precipitation (meteorology), Water supply, Mountains.

42-865
K(a)-band radar observations of wintertime Sierra Nevada clouds.
Walsh, P.A., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.181-184, 6 refs.
Cloud seeding, Nucleating agents, Radiometry, Ice nuclei, Precipitation (meteorology), Mountains, Microwaves.

42-866
Remote automatic system for modification of winter orographic clouds.
Hill, G.E., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.185-188, 12 refs.
Cloud seeding, Ice nuclei, Microwaves, Nucleating agents, Weather modification, Mountains, Remote sensing, Radiometry.

42-867
Supercooled liquid water concentrations in winter orographic clouds from ground-based ice accretion measurements.
Henderson, T.J., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.189-194, 18 refs.
Supercooled clouds, Cloud seeding, Ice nuclei, Water content, Ice accretion, Weather modification, Precipitation (meteorology), Stream flow, Mountains, Ice detection.

42-868
Some classification techniques for irregular snow particles recorded by two-dimensional optical array probes.
Holroyd, E.W., III, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.195-198, 3 refs.
Snowflakes, Snowfall, Ice optics, Snow accumulation, Computer applications, Classifications.

42-869
Integrated ground-based storm sampling strategy to assist evaluation of cloud seeding effects.
Pitter, R.L., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.205-207, 4 refs.
Lamb, D.
Cloud seeding, Snow cover, Snowfall, Snowflakes, Ice crystal nuclei, Snow composition, Mountains.

42-870
Research for physical evaluation of the North Dakota cloud modification project.
Smith, P.L., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.209-214, 16 refs.
Cloud seeding, Radar echoes, Snow pellets, Weather modification, Hail prevention, Rain.

42-871
Ground seeding for the future of hail suppression?.
Admirat, P., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.215-218, 6 refs.
Caponigro, R.
Cloud seeding, Hail prevention, Ice optics, Ice crystal growth, Temperature effects.

42-872
Application of slow acting contact-freezing nuclei in ice-phase weather modification.
Fukuta, N., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.219-224, 13 refs.
Weather modification, Ice nuclei, Cloud seeding, Nucleating agents, Temperature effects, Analysis (mathematics).

42-873
On the effectiveness of artificial seeding from below cumulus cloud base.
DeMott, P.J., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.225-228, 5 refs.
Finnegan, W.G., Grant, L.O.
Cloud seeding, Ice nuclei, Ice crystals, Nucleating agents, Temperature effects.

42-874
Activation and deactivation of silver iodide aerosols in the atmosphere.
Layton, R.G., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, Aerosols, 21 refs.
Caple, G.
Aerosols, Cloud seeding, Ice crystal nuclei, Nucleating agents, Precipitation (meteorology), Ice structure.

42-875
Chemical tracer experiment in the Sierra Nevada for assessing the effects of winter cloud seeding.
Warburton, J.A., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.241-244, 5 refs.
Stone, R.H., Marler, B.
Cloud seeding, Weather modification, Precipitation (meteorology), Snow surveys, Aerosols, Nucleating agents, Radar echoes, Mountains, Equipment.

42-876
Nevada/NOAA cooperative weather modification project.
Warburton, J.A., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.245-246.
Reinking, R.F.
Weather modification, Cloud seeding, Snow composition, Radiometry, Research projects, Nucleating agents, Mountains, Microwaves, Isotope labeling, Aerosols.

42-877
Following the path of cloud seeding agents in cumulus clouds with a gaseous tracer: results of aircraft measurements.
Stith, J.L., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.247-250, 9 refs.
Cloud seeding, Nucleating agents, Ice nuclei, Unfrozen water content, Wind factors.

42-878
On the influence of acoustic vibration on the regime of air motion in the boundary layer of spherical precipitation particle falling.
Xu, H., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.263-268, 10 refs.
Wang, S.
Vibration, Weather modification, Hail prevention, Explosion effects, Ice nuclei, Sound waves, Snowfall, Acoustics, Cloud seeding, Rain.

42-879
New idea of hail suppression and primary results of numerical simulation tests.
Xu, H., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.269-272, 3 refs.
Wang, S.
Hail prevention, Hailstone growth, Cloud seeding, Nucleating agents.

42-880
Ways of increasing the ice-nucleating effectiveness of cloud seeding agents.
Beliaev, S.P., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.273-276, 5 refs.
Kim, N.S., Sedunov, IU.S., Volkovitskiĭ, O.A.
Cloud seeding, Ice nuclei, Nucleating agents, Supercooled clouds, Aerosols, Mathematical models, Experimentation, Temperature effects.

42-881
Evaluation method of physical efficiency of hailstorm process modification.
Fedchenko, L.M., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.277-279, 4 refs.
Kalazhokov, Kh.Kh., Ashabokov, B.A.
Weather modification, Hail prevention, Artificial ice, Hail clouds, Storms, Radar echoes, Nucleating agents, Mountains.

42-882
Principal basises and principles of hail processes' modification.
Bibilashvili, N.Sh., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.281-284, 5 refs.
Kartsivadze, A.I.
Cloud seeding, Weather modification, Hail prevention, Ice nuclei, Phase transformations, Radio echoes.

42-883
Change of precipitation chemical composition during hail suppression.
Gromova, T.N., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.285-289, 6 refs.
Sveshnikov, G.B., Ungerman, T.M.
Cloud seeding, Hail prevention, Air pollution, Nucleating agents, Chemical analysis, Precipitation (meteorology), Rain.

42-884
Numerical simulation of the HIPLEX-1 field experiment.
Orville, H.D., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.337-342, 6 refs.
Wu, L.M., Hirsch, J.H.
Cloud seeding, Ice crystal growth, Precipitation (meteorology), Analysis (mathematics), Water content, Statistical analysis.

42-885
Further results on numerical cloud seeding simulations of stratiform-type clouds.
Orville, H.D., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.343-346, 7 refs.
Hirsch, J.H., Farley, R.D.
Cloud seeding, Unfrozen water content, Freezing, Ice crystal growth, Heat recovery, Analysis (mathematics), Models, Temperature effects.

42-886
Numerical simulation of stratus cloud dispersal with dry ice seeding.
Levin, Z., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.347-352, 11 refs.
Kubitsky, O., Alpert, P.
Cloud seeding, Ice crystal growth, Fog, Dispersions, Nucleating agents, Supercooled clouds, Countermeasures, Analysis (mathematics), Dry ice (trademark).

42-887
Comparison of winter orographic storms over the San Juan and Sierra Mountains.
Marwitz, J.D., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.375-378, 18 refs.
Cloud seeding, Cloud physics, Ice crystal growth, Mountains, Storms, Rain.

42-888
Physical basis for augmentation of precipitation in the Sierra Nevada.
Reynolds, D.W., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.379-384, 7 refs.
Dennis, A.S.
Cloud seeding, Ice crystal growth, Precipitation (meteorology), Cloud physics, Supercooled clouds, Water temperature, Mountains, Nucleating agents, Models.

42-889
Precipitation gage network design for effective evaluation of winter orographic cloud seeding in the central Rocky Mountains.
Klazura, G.E., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.397-402, 30 refs.
Super, A.B., Medina, J.G.
Cloud seeding, Runoff, Snowfall, Precipitation gages, Weather modification, Winter.

42-890
Natural and artificial modification of the cloud causing heavy snowfall.
Endoh, T., *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.415-416, 2 refs.
Snowfall, Weather modification, Cloud seeding, Water reserves.

42-891
Convective storm characteristics in the midwest pertinent to weather modification efforts.
Westcott, N., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.433-436, 10 refs.
Ackerman, B.
Weather modification, Cloud physics, Cloud seeding, Precipitation (meteorology), Freezing points.

42-892
Results of field experiments on artificial enhancement of precipitation in the Ukraine.
Bulkov, M.V., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.519-523, 6 refs.
Precipitation (meteorology), Cloud seeding, Dry ice (trademark), Weather modification, Nucleating agents, Winter.

42-893
Numerical simulation of the ice phase in cumulonimbus updrafts by AgI particles released by Soviet rockets.
Lacaux, J.P., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.559-562, 2 refs.
Sarthou, P.
Cloud seeding, Ice crystal growth, Nucleating agents, Wind velocity, Temperature effects, Unfrozen water content.

42-894
Experiment of supercooled fog dispersal at Sarajevo airport and skiing slopes of the 14th winter olympic games.
Milošević, D., et al, *World Meteorological Organization. Technical document,* 1985, WMO/TD-No.53, WMO Scientific Conference on Weather Modification, 4th, Honolulu, HI, Aug. 12-14, 1985. Proceedings. Weather modification programme, p.633-638, 7 refs.
Bajić, S., Radonjić, Z., Fukuta, N.
Supercooled fog, Cloud seeding, Weather modification, Snowfall, Visibility, Dispersions, Countermeasures, Equipment, Wind factors, Temperature effects.

42-895
Wintertime characteristics of supercooled liquid water over the Grand Mesa of western Colorado.
Boe, B.A., et al, *Journal of weather modification*, 1986, Vol.18, p.102-107, 8 refs.
Super, A.B.
Supercooled clouds, Airborne equipment, Cloud physics, Icing rate.

42-896
Wintertime supercooled liquid water flux over the Grand Mesa, Colorado.
Thompson, J.R., et al, *Journal of weather modification*, 1987, Vol.19, p.92-98, 8 refs.
Super, A.B.
Supercooled clouds, Airborne equipment, Cloud physics, Icing rate.

42-897
Ice/water interface.
Karim, O.A., et al, *Chemical physics letters*, Aug. 7, 1987, 138(6), p.531-534, 21 refs.
Haymet, A.D.J.
Ice water interface, Models, Simulation, Ice crystals, Hydrogen bonds, Density (mass/volume), Diffusion.

42-898
Non-freezing water in simple salt solutions.
Mayer, E., *Chemical physics letters*, Aug. 28, 1987, 139(3-4), p.370-374, 34 refs.
Solutions, Salinity, Freezing, Unfrozen water content.

42-899
Chemical differences between rime ice and snow.
Mitchell, D.L., Reno, University of Nevada, 1986, 188p., University Microfilms order No.1328453, M.S. thesis. Refs. p.152-157. For abstract see Masters Abstracts International, Spring 1987, p.104.
Snow composition, Ice composition, Hoarfrost, Chemical analysis, Cloud droplets, Snowfall, Aerosols, Supercooled clouds, Ions.

42-900
Digging-and-loading work in quarries. [Vyemochno-pogruzochnye raboty na kar'erakh],
Beliakov, IU.I., Moscow, Nedra, 1987, 268p., In Russian with abridged English table of contents enclosed. 50 refs.
Mining, Quarries, Frost penetration, Rock excavation, Equipment, Placer mining, Thaw weakening.

42-901
10-Be in polar ice: data reflect changes in cosmic ray flux or polar meteorology.
Lal, D., *Geophysical research letters*, Aug. 1987, 14(8), p.785-788, 27 refs.
Ice cores, Ice composition, Antarctica—Vostok Station.
Expected changes in the global cosmic ray production of Be-10 in the atmosphere are related to changes in solar activity, and consequent variations in its fallout in the polar regions. The global Be-10 production rate is about 20% higher during periods of very low solar activity, compared to the average solar modulation level observed during the past 3 solar cycles. The stratospheric Be-10 fallout pattern was derived using the fallout data for Sr-90 as an analog. This fallout shows an amplitude attenuation by a factor of about three at 70 deg; the higher the latitude, the higher the attenuation. The results have been compared with the long time series available for Be-10 in polar ice in Greenland and in Antarctica, 70-78 deg latitude. It is concluded that the observed variations in Be-10 concentrations in ice cores are primarily due to climatic changes, for both short and long period variations. Thus Be-10 data can be used as a proxy for climate induced meteorological changes in the polar region. (Auth.)

42-902
Baseline acidity of precipitation at the South Pole during the last two millennia.
Cragin, J.H., et al, *Geophysical research letters*, Aug. 1987, 14(8), MP 2275, p.789-792, 38 refs.
Giovinetto, M.B., Gow, A.J.
Ice composition, Firn, Chemical properties, Antarctica—Amundsen-Scott Station.
Measurements of meltwater pH from annual layers of South Pole firn and ice samples ranging in age from 40 to 2000 years B.P. show that precipitation at this remote site has a higher natural acidity than that expected from atmospheric equilibrium with CO2. The average pH of deaerated (CO2-free) samples was 5.64, while air-equilibrated samples averaged 5.37, a pH that is about a factor of two more acidic than the expected background pH of 5.65. The observed "excess" acidity can be accounted for by sulphur and nitrogen cation levels in the samples originating from non-anthropogenic H2SO4 and HNO3. Because of the presence of these naturally occurring acids in South Pole precipitation, a pH of 5.4 is considered a more representative baseline reference pH for acid precipitation studies. (Auth.)

42-903
Azimuthal dependence in the gravity field induced by recent and past cryospheric forcings.
Yuen, D.A., et al, *Geophysical research letters*, Aug. 1987, 14(8), p.812-815, 14 refs.
Gasperini, P., Sabadini, R., Boschi, E.
Ice volume, Gravity, Periodic variations, Antarctica.
Present-day glacial activities and the current variability of the antarctic ice volume can cause variations in the long-wavelength gravity field as a consequence of transient viscoelastic responses in the mantle. The azimuthal dependence of the secular variations of the gravitational potential is studied. It is found that the non-axisymmetric contributions are more important for recent glacial retreats than for Pleistocene deglaciation. Changes in land-based ice covering Antarctica can be detected by monitoring satellite orbits and their sensitivity to variations in gravitational harmonic for degree *l* greater than 3. Resonances in satellite orbits may be useful for detecting these azimuthally-dependent gravity signals. (Auth.)

42-904
Consequences of experimental transient rheology.
Sabadini, R., et al, *Geophysical research letters*, Aug. 1987, 14(8), p.816-819, 15 refs.
Smith, B.K., Yuen, D.A.
Tectonics, Rheology, Ice sheets, Ice creep, Antarctica.
Recent analyses of transient creep data for lower crustal and upper mantle substances show that the parameters of the Burgers' body rheological model, used up to now by geodynamicists, have much lower ratios of the short-term to long-term viscosities than the laboratory values. These data are used to constrain the viscosity contrast across a 670 km discontinuity. Results show that the previously inferred viscosity variations are now reduced by about a factor of ten in the new transient models. This finding is in agreement with the revised viscosity estimate based on long-wavelength geoid anomalies and seismic tomography. It is shown that time-dependent perturbations to the gravity field from recent ice movements in Antarctica are not at all small. (Auth.)

42-905
Optical model for the microwave properties of sea ice.
Gloersen, P., et al, *U.S. National Aeronautics and Space Administration. Technical memorandum*, Nov. 1981, NASA TM 83865, 25p., N82-17561, 32 refs.
Larabee, J.K.
Sea ice, Microwaves, Ice electrical properties, Models, Analysis (mathematics).

42-906
Appendices A and B for measurements of radar backscatter from Arctic sea ice in the summer.
Onstott, R.G., et al, *Kansas. University. Center for Research. Remote Sensing Laboratory. Technical memorandum*, July 1981, RSL-TM 331-22, 107p. ADA-105 736.
Cogineni, S., Moore, R.K., Delker, C.V.
Sea ice, Radar echoes, Backscattering.

42-907
Sensitivity of a climatologically-driven sea ice model to the ocean flux.
Parkinson, C.L., et al, *U.S. National Aeronautics and Space Administration. Technical memorandum*, Jan. 1982, NASA TM 83877, 29p., N82-17799, 8 refs.
Good, M.R.
Sea ice distribution, Heat flux, Ice melting, Sea water, Ice bottom surface, Ice cover thickness, Mathematical models, Antarctica—Weddell Sea.
A set of ocean-heat-flux sensitivity studies has been performed on a numerical model of sea ice covering the Weddell Sea. The model is driven by mean-monthly climatological atmospheric variables; it contains an 8-hour timestep and a 200-km horizontal resolution; and the simulations proceed from Jan. of year 1 through Feb. of year 2. For each model run, the ocean heat flux is uniform in both space and time. In a series of 6 model runs, this flux magnitude has been varied from 0 to 40 W/sq m, with the result that, in these climatologically-driven simulations, a value of 25 W/sq m yields the most realistic sea ice distributions. Ocean heat fluxes below 20 W/sq m do not provide sufficient energy to allow the ice to melt to its summertime thicknesses and concentrations by the end of the 14-month simulation, whereas ocean heat fluxes of 30 W/sq m and above result in too much ice melt, producing the almost total disappearance of ice in the Weddell Sea by the end of the 14 months. These results, however, are strongly dependent on the atmospheric forcing fields. (Auth.)

42-908
Polycyclic hydrocarbon content in antarctic sea water samples. [Estudios del contenido en hidrocarburos policiclicos en muestras de agua de mares antárticos],
Ventajas, L., *Buenos Aires. Instituto Antártico Argentino. Contribución*, 1987, No.333, 15p., In Spanish with English, French and German summaries. 5 refs.
Water pollution, Hydrocarbons, Adsorption, Sea ice.
The concentrations of dicyclic, tricyclic and tetracyclic hydrocarbons in samples obtained from the antarctic seas were studied. It is found that there is, proportionally, a high concentration of dicyclic hydrocarbons and the reasons why this happens are discussed; the data obtained are compared with those of samples from contaminated seas, Fuegian petroleum and ice. (Auth.)

42-909
Occlusion of polynucleate hydrocarbons in ice. [Oclusión de hidrocarburos polinucleados por los hielos],
Ventajas, L., *Buenos Aires. Instituto Antártico Argentino. Contribución*, 1987, No.334, 9p., In Spanish with English, French and German summaries. 4 refs.
Hydrocarbons, Water pollution, Ice composition, Adsorption, Antarctica—Marambio Station, Antarctica—Belgrano II Station.
Studies of the occlusion and adsorption of polynucleate hydrocarbons in ice are considered. Determinations of spectrofluorometry have been carried out in antarctic sea ice and in frozen sea water to which small quantities of crude petroleum were added. Tabulated data obtained at Marambio and Belgrano II stations are presented. (Auth. mod.)

42-910
Data processing methods for environmental radiophysical studies. [Metody obrabotki dannykh radiofizicheskogo issledovaniia okruzhaiushchei sredy],
Armand, N.A., et al, Moscow, Nauka, 1987, 270p., In Russian with abridged English table of contents enclosed. Refs. p.258-266.
Krapivin, V.F., Mkrtchian, F.A.
Aerial surveys, Permafrost distribution, Spacecraft, Monitors, Measuring instruments, Microwaves, Radiometry, Computer applications, Hydrology, Landscape types, Vegetation patterns.

42-911
Geochemical specialization of the granitoids in the zone of a deep subsurface fault (eastern Siberia).
Trubacheva, E.Sh., *Soviet geology and geophysics*, 1986, 27(9), p.71-76, Translated from Geologiia i geofizika, 1986. 12 refs.
Rocks, Geochemistry, Minerals.

42-912
Formation and transformation of atmospheric precipitation on underlying surfaces. [Formirovanie i preobrazovanie atmosfernykh osadkov na podstilaiushchei poverkhnosti],
Litvinov, I.V., Leningrad, Gidrometeoizdat, 1987, 232p., In Russian with abridged English table of contents enclosed. 281 refs.
Rain, Hoarfrost, Snow, Water vapor, Ice crystal growth, Icing, Glaze.

42-913
Laboratory studies of the effect of release waves on the breakup of the ice cover in the tailwaters of hydroelectric power plants.
Bolotnikov, G.I., *Fluid mechanics. Soviet research*, Sep.-Oct. 1982, 11(5), p.83-88, For Russian original see 37-2301. 5 refs.
Electric power, Hydraulic structures, Icebound lakes, Ice breakup, Models, Laboratory techniques.

42-914
Geochemistry of freezing brines. Low-temperature properties of sodium chloride.
Thurmond, V.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1987, CR 87-13, 11p., ADA-185 751, 21 refs.
Brass, G.W.
Brines, Freezing, Geochemistry, Solutions, Low temperature tests, Solutions, Chemical properties, Thermodynamics, Salinity.
Thermodynamic properties of electrolyte solutions change rapidly below 25 C, but these properties are seldom measured over the low temperature range (below 0 C), even though some salt solutions can remain unfrozen to -50 C. The heat capacities of concentrated solutions (0.5-6.0 molal) of NaCl-H2O were measured from 25 C to -40 C as part of a study to provide thermodynamic data of salt solutions for use in cold regions chemical geophysical studies. A differential scanning calorimeter was used to measure specific heat capacity from cooling scans as a function of temperature and concentration. The heat capacity data were fit to the equations of Pitzer and coworkers to obtain activity and osmotic coefficients of NaCl and H2O, respectively, below 0 C. Supercooling of the solutions was encouraged by using a fast scan rate (10 deg/minute) so that specific heat could be measured to lower temperatures than would be possible if the solutions were allowed to equilibrate with the solid phases. The solubility of ice was calculated and compared to the experimental freezing point of NaCl solutions.

42-915
Analysis of snow samples contaminated with chemical warfare agents.
Johnsen, B.A., et al, *Archives belges de médecine sociale, hygiène, médecine du travail et médecine légale,* [1984], Supplement, World Congress [on] New Compounds for Biological and Chemical Warfare: Toxicological Evaluation. Proceedings, p.22-30, 3 refs.
Blanch, J.H.
Snow impurities, Pollution, Military operation, Chemical composition.

42-916
Nickel steels in arctic service.
Schillmoller, C.M., et al, *Materials performance,* Oct. 1987, 26(10), p.46-49, 15 refs.
Craig, B.D.
Steels, Weathering, Pipes (tubes), Offshore structures, Welding, Corrosion, Cracking (fracturing).

42-917
Decontamination of nuclear power plant components by ice-blasting technique.
Kimuro, H., et al, *Ishikawajima-Harima engineering review,* Mar. 1987, 27(2), p.90-93, In Japanese with English summary.
Suzuki, Y.
Hydraulic jets, Ice blasting, Decontamination.

42-918
Icebreaking cargo ships.
Kanerva, M., et al, *Royal Institution of Naval Architects. Transactions,* 1985, Vol.127, p.309-327, With discussion and authors' reply. 16 refs.
Lönnberg, B.
Ships, Icebreakers, Ice navigation.

42-919
Atmospheric icing of structures.
International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, 242p., Refs. passim. For individual papers see 40-3995, 42-920 through 42-942 and 42-944 through 42-951.
Ervik, M., ed.
Power line icing, Ice loads, Ice accretion, Structures, Wind pressure, Transmission lines, Towers, Power line supports, Meetings, Meteorological data.

42-920
Meteorological data acquisition program for transmission line designers.
Brodie, N.W., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.3-10, 6 refs., Includes discussion.
Franklin, D.E.
Power line icing, Meteorological data, Ice loads, Transmission lines, Remote sensing, Towers, Design, Power line supports.

42-921
Earlier Norwegian iceload research. A review of investigations and results.
Pikke, S.M., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.11-18, 1 ref., Includes discussion.
Johansen, O.S.
Ice loads, Icing, Structures, Ice accretion, Wind direction, Altitude.

42-922
Measurements of iceloads on transmission line routes in Iceland.
Jonasson, A.B., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.19-21, 4 refs., Includes discussion.
Ice loads, Power line icing, Transmission lines, Tests, Wind pressure, Dynamometers, Iceland.

42-923
Meteorological instrumentation for characterizing atmospheric icing.
Bates, R.E., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, MP 2276, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.23-30, 4 refs., Includes discussion.
Govoni, J.W.
Icing, Structures, Meteorological factors, Hoarfrost, Glaze, Frost, Measuring instruments, Ice detection.
The accumulation of rime and glaze ice on structures depends on meteorological variables such as wind, precipitation rate, air temperature, fog density and atmospheric moisture content. However, highly accurate measurements of meteorological variables during periods of icing (including wet snow) that occur in the cold regions of the world are for the most part unavailable due to instrumentation failure or geographic remoteness. For the last 5 years, USACRREL has been modifying, testing, and utilizing state-of-the-art sensors and recording systems for measuring winter environmental conditions. This paper discusses meteorological sensors (including ice detectors) used in adverse cold environments, including the mountainous areas of the northeastern United States. One of the state-of-the-art site-specific sensor packages, the newly developed Environmental Instruments Model 200 Dual Processor Meteorological System, has been thoroughly evaluated during periods of adverse weather and icing. The system has no moving parts, but incorporates two static pair heated resistive sensing elements for measuring wind speed and direction, a platinum resistance thermometer for temperature, and a pressure transducer for atmospheric pressure. Results obtained and problem areas encountered using a number of different sensors in adverse weather conditions at both the CRREL snow-field experiment test sites and high elevation winter icing experiment sites are discussed.

42-924
Ice detector measurements compared to meteorological parameters in natural icing conditions.
Tucker, W.B., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, MP 2277, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.31-37, 18 refs., Includes discussion.
Howe, J.B.
Ice detection, Icing, Ice accretion, Structures, Air temperature, Wind velocity, Unfrozen water content, Cloud droplets, Measuring instruments.
Several seasons of icing data have been collected under natural icing conditions on the summit of Mt. Washington, New Hampshire. Two models of the Rosemount Ice Detector were evaluated in the context of providing icing intensity data under various conditions. Average temperature, windspeed, liquid water content and median droplet diameter were also recorded for each icing event, the latter two parameters being provided by rotating multicylinders. A measure of icing rate has been calculated from the liquid water content and the wind speed, and has been compared to the ice detector cycling rates. For detectors with long heat-on times, the upper limit (maximum cycling rate) of the detector is easily reached under natural conditions. The detector with long heat-on times also exhibits problems at higher temperatures. At environmental temperatures near freezing, the probe takes considerable time to cool below freezing and begin to again accumulate ice. Thus a maximum cycle rate is reached under these conditions which can be well below the actual icing rate. Under prolonged icing conditions, ice accumulations on the unheated parts of the probe and support structure can interfere with the airflow past the probe, significantly changing the collection efficiency. Under extreme conditions, this can result in a complete lack of cycling. The problems associated with application of the ice detector cycling rates as a measure of accretion rates on more complex objects are also discussed. In particular, the fact that the collection efficiency is so strongly dependent on the droplet size distribution may limit its usefulness.

42-925
Remote sensing of atmospheric icing in Quebec.
Félin, B., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.39-45, 4 refs., Includes discussion.
Ice loads, Power line icing, Ice detection, Remote sensing, Meteorological factors.

42-926
Experiences in using meteorological data for rime accumulation calculations in Finland.
Ahti, K., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.47-48, 3 refs., Includes discussion.
Icing, Hoarfrost, Ice accretion, Ice loads, Meteorological data, Statistical analysis.

42-927
Mechanical properties of atmospheric ice.
Druez, J., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.51-56, 10 refs., Includes discussion.
Laforte, J.L., Nguyen, D.D.
Icing, Wind tunnels, Ice accretion, Supercooling, Drops (liquids), Compressive properties, Ice adhesion, Air temperature.

42-928
Preliminary investigation on effect of wind speed fluctuations on ice accretions grown on fixed and rotating aluminium conductor.
Laforte, J.L., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.57-64, 10 refs., Includes discussion.
Phan, L.C., Du, N.D.
Ice accretion, Structures, Wind tunnels, Supercooling, Drops (liquids), Ice adhesion, Hoarfrost, Ice density.

42-929
Role of ice crystals on ice accretion processes.
Gayet, J.F., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.65-69, 13 refs., Includes discussion.
Bain, M., Soulage, R.G.
Ice accretion, Ice crystals, Aircraft icing, Wind tunnels, Supercooled clouds, Air temperature, Wind velocity.

42-930
Superstructure icing observations on the semisubmersible *Ocean Bounty* in lower Cook Inlet, Alaska.
Nauman, J.W., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.71-79, 16 refs., Includes discussion.
Sea spray, Ship icing, Superstructures, Ice accretion, Wind velocity, Offshore structures, Air temperature, Sea water.

42-931
VHL sea spray icing tunnel.
Carstens, T., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.81-87, 2 refs., Includes discussion.
Jörgensen, T.S., Karterud, T., Skaret, O.
Icing, Sea spray, Offshore structures, Wind tunnels, Design, Countermeasures, Protection.

42-932
Ice accretion on insulators of high-voltage transmission lines.
Phan, L., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim EFI technical report,* June 1987, No.3439, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.89-94, 8 refs., Includes discussion.
Ice accretion, Power line icing, Transmission lines, Hoarfrost, Ice density, Experimentation.

42-933
Self-shedding of accreted ice from high-speed rotors.
Itagaki, K., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, MP 2278, International Workshop [on] Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.95-100, 18 refs., Includes discussion.
Icing, Propellers, Helicopters, Ice accretion, Supercooled fog, Ice removal, Ice adhesion, Temperature effects, Countermeasures, Ice cover thickness, Tensile properties.
Ice accreted on high-speed rotors operating in supercooled fog can be thrown off by centrifugal force, creating severe unbal-

ance and dangerous projectiles. A simple force balance analysis indicates that the strength of accreted ice and its adhesive strength can be obtained by measuring the thickness of the accretion, the location of the separation, the rotor speed and the density. Such an analysis was applied to field and laboratory observations of self-shedding events. The results agree reasonably well with other observations.

42-934
Computer modeling of atmospheric ice accretion and aerodynamic loading of transmission lines.
Egelhofer, K.Z., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, MP 2279, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.103-109, 12 refs., Includes discussion.
Ackley, S.F., Lynch, D.R.
Ice accretion, Power line icing, Transmission lines, Wind pressure, Analysis (mathematics), Air flow, Computer applications, Ice forecasting, Models, Supercooling.
A time-dependent computer model capable of predicting the accretion of rime ice on a wire free to rotate is described. A finite element technique is used to obtain the air velocity field adjacent to the wire. A local collision efficiency is calculated for several radial sectors of the wire by tracking supercooled water droplets of various sizes until they collide with the wire. The asymmetric buildup of ice causes the wire to rotate, changing the flow field around the wire and the rate of ice accretion. The finite element technique is a very effective method of analyzing this problem because the ice accretion shape is not limited to a simple geometric shape. The drag force is computed as a function of time to investigate the forces acting on the wire during an icing event. Model results are presented including comparisons of icing simulations of wires of various rigidities and lengths.

42-935
Approximate method for time-dependent modelling of rime ice accretion.
Gates, E.M., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.111-116, 12 refs., Includes discussion.
Lozowski, E.P., Finstad, K.J.
Ice accretion, Hoarfrost, Icing, Models, Time factor, Supercooling, Drops (liquids).

42-936
Determination of icing loads from end cable tension.
McComber, P., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.117-123, 7 refs., Includes discussion.
Bouchard, D.
Ice loads, Power line icing, Tensile properties, Analysis (mathematics), Wind velocity, Temperature effects.

42-937
Theoretical solutions of ice accretion on cables.
Poots, G., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.125-136, 22 refs., Includes discussion.
Ice accretion, Power line icing, Supercooled fog, Wind factors, Mathematical models, Air flow.

42-938
Estimating method of snow load on overhead power lines.
Sakamoto, Y., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.137-140, Includes discussion.
Ishihara, K.
Snow loads, Power line icing, Transmission lines, Snow accumulation, Wet snow, Wind pressure, Mathematical models.

42-939
Icing on offshore structures—atmospheric icing.
Horjen, I., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.141-155, 17 refs., Includes discussion.
Icing, Offshore structures, Ice accretion, Supercooled fog, Raindrops, Temperature effects, Freezing, Ice density, Analysis (mathematics), Thermodynamics.

42-940
Environment Canada's research project in ice and wind load modelling for electrical transmission facilities.
Welsh, L.E., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.157-160, 2 refs., Includes discussion.
Brown, R.
Power line icing, Ice loads, Wind pressure, Research projects, Ice accretion, Models, Meteorological factors, Computer applications, Canada.

42-941
Weather related loads on transmission lines and their consequences.
Krishnasamy, S.G., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.163-167, 2 refs., Includes discussion.
Power line icing, Ice loads, Transmission lines, Ice accretion, Dynamic loads, Wind factors, Ice storms.

42-942
Combined loading of ice and wind on guyed towers.
Davenport, A.G., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.169-172, Includes discussion.
Icing, Ice loads, Wind pressure, Towers, Structures, Analysis (mathematics), Cables (ropes).

42-943
World weather extremes.
Riordan, P., et al, *U.S. Army Engineer Topographic Laboratories. Report,* Dec. 1985, ETL-0416, 82p., ADA-170 138, 260 refs.
Bourget, P.G.
Records (extremes), Snowfall, Weather observations, Meteorological charts, Precipitation (meteorology), Solar radiation, Wind factors, Temperature variations.

42-944
Ice- and wind-load measurements on a guyed TV-mast in Finland.
Lehtonen, P., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.183-187, 1 ref., Includes discussion.
Laiho, J.
Towers, Ice loads, Wind pressure, Structures, Icing, Air temperature, Vibration, Ice removal.

42-945
Development and operation of a galloping conductor test facility.
Egbert, R.I., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.189-194, 5 refs., Includes discussion.
Snyder, M.H., Thomann, G.C.
Power line icing, Ice accretion, Transmission lines, Ice storms, Tests, Stability.

42-946
Progress in field research on control of galloping of iced conductors.
Havard, D.G., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.195-203, 27 refs., Includes discussion.
Pohlman, J.C.
Power line icing, Ice control, Ice accretion, Stability, Wind factors, Tests, Air flow.

42-947
Questions on filling rates of lattice towers.
Berge, H.J., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.205-206, Includes discussion.
Icing, Structures, Ice loads, Towers.

42-948
Ice accretion and transmission line galloping.
Tunstall, M.J., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.207-210, 4 refs., Includes discussion.
Wind factors, Power line icing, Ice accretion, Transmission lines, Air flow, Stability.

42-949
Icing model applied on a planned transmission line.
Ervik, M., et al, *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.213-221, 6 refs., Includes discussion.
Fikke, S.M.
Power line icing, Ice models, Transmission lines, Ice loads, Meteorological data, Ice growth, Tests, Computer applications.

42-950
IEC work on icing.
Schjetne, K., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.223-225, Includes discussion.
Ice loads, Power line icing, Wind pressure, Power line supports, Bearing strength, Organizations.

42-951
Description of icing cases leading to tower collapse on the 300 kv electric power line Dale-Fana.
Kleppe, L., *Norway. Elektrisitetsforsyningens forsknings-institutt, Trondheim. EFI technical report,* June 1987, No.3439, International Workshop on Atmospheric Icing of Structures, 2nd, Trondheim, Norway, June 19-21, 1984. Proceedings. Edited by M. Ervik, p.227-234, Includes discussion.
Power line icing, Power line supports, Ice loads, Ice accretion, Steel structures, Bearing strength, Damage, Meteorological factors.

42-952
Frost mounds at Toolik Lake, Alaska.
Hinkel, K.M., et al, *Physical geography,* Apr.-June 1987, Vol.8, p.148-159, 26 refs.
Nelson, F.E., Outcalt, S.I.
Permafrost physics, Frost mounds, Landforms, Swamps, Active layer, Ice crystals, Seasonal freeze thaw.

42-953
Glaciokarst depressions in the Door Peninsula, Wisconsin.
Rosen, C.J., et al, *Physical geography,* Apr.-June 1987, Vol.8, p.160-168, 24 refs.
Day, M.J., Piepenburg, K.
Karst, Glacial erosion, Paleoclimatology, Topographic features, United States—Wisconsin—Door Peninsula.

42-954
Density functional theory of freezing: analysis of crystal density.
Laird, B.B., et al, *Journal of chemical physics*, Nov. 1, 1987, 87(9), p.5449-5456, 48 refs.
McCoy, J.D., Haymet, A.D.J.
Crystal growth, Freezing, Phase transformations, Density (mass/volume), Liquids, Analysis (mathematics).

42-955
Impact of meteorological events on sediment production and sediment transport in different periglacial areas in northern Scandinavia.
Jonasson, C., et al, *Uppsala. Universitet. Naturgeografiska institutionen. UNGI rapport*, 1987, No.65, Climatological extremes in the mountains, physical background, geomorphological and ecological consequences. Edited by H. Alexandersson and B. Holmgren, p.149-159, Refs. p.157-159.
Strömquist, L.
Periglacial processes, Slope processes, Sedimentation, Geomorphology, Talus, Sediment transport.

42-956
Slush avalanches in the Abisko Mountains, Sweden—initiated by normal or extreme weather conditions?.
Nyberg, R., *Uppsala. Universitet. Naturgeografiska institutionen. UNGI rapport*, 1987, No.65, Climatological extremes in the mountains, physical background, geomorphological and ecological consequences. Edited by H. Alexandersson and B. Holmgren, p.161-170, 7 refs.
Avalanche formation, Snow melting, Slush, Mountains, Meteorological factors, Temperature variations, Sweden—Abisko Mountains.

42-957
Cumulative impacts of oil fields on northern Alaskan landscapes.
Walker, D.A., et al, *Science*, Nov. 6, 1987, 138(4828), p.757-761, Numerous refs.
Environmental impact, Thermokarst, Flooding, Petroleum industry, United States—Alaska—North Slope.

42-958
Map of erosion-hazardous lands in the noncchernozem zone of the RSFSR.
Makkaveev, N.I., et al, *Soviet geography*, June 1984, 25(6), p.390-397, For Russian original see 36-3098. 13 refs.
Podsol, Cryogenic soils, Water erosion, Meltwater, Frost action, Freeze thaw cycles, Gullies, Maps, Soil mapping.

42-959
Air pollution in Noril'sk: a Soviet worst case?.
Bond, A.R., *Soviet geography*, Nov. 1984, 25(9), p.665-680, 31 refs.
Wastes, Air pollution, Urban planning, Environmental protection, Maps, Subarctic regions, Residential buildings, Permafrost beneath structures, Industrial buildings.

42-960
Periglacial processes and historical geocryology (a review article).
Velichko, A.A., et al, *Soviet geography*, Dec. 1984, 25(10), p.758-764, Translated from Akademiia nauk SSSR. Izvestiia. Seriia geograficheskaia, 1984, No.2, p.113-119.
Nechaev, V.P.
Paleoclimatology, Paleoecology, Periglacial processes, Geocryology, Permafrost origin, Environmental impact, Permafrost distribution.

42-961
Central Yakutian lowlands: land of climatic extremes, permafrost and alassy depressions.
Koutaniemi, L., *Soviet geography*, June 1985, 26(6), p.421-436, Refs. p.434-435.
Permafrost origin, Permafrost distribution, Plains, Alassy, Permafrost structure, Ice structure, Human factors, Maps, Meteorological charts.

42-962
Systematic guide on forecasting temperature regime of permafrost (the northern part of West Siberia taken as an example). [Metodicheskoe posobie po prognozu temperaturnogo rezhima vechnomerzlykh gruntov (na primere severa Zapadnoĭ Sibiri)],
Fel'dman, G.M., Yakutsk, Institut Merzlotovedeniia SO AN SSSR, 1983, p.3-41, In Russian with English table of contents enclosed. 9 refs.
Manuals, Permafrost thermal properties, Thermal regime, Active layer, Snow depth, Snow density, Maps, Air temperature, Snow cover effect, Vegetation factors.

42-963
Calculating the ice-clearing load on offshore structure imposed by a rubble field.
Gershunov, E.M., *Oil and gas journal*, Dec. 16, 1985, 83(50), p.120-121, 2 refs.
Offshore structures, Ice loads, Ice jams, Ice breaking.

42-964
Very slow flows of solids. Basics of modeling in geodynamics and glaciology.
Liboutry, L.A., Dordrecht, The Netherlands, Martinus Nijhoff Publishers, 1987, 510p., Refs. passim.
Glaciology, Glacier flow, Ice sheets, Rheology, Soil mechanics, Elastic properties, Plasticity, Viscoelasticity, Models, Analysis (mathematics).

42-965
Field tests of the ARCAT II in Prudhoe Bay.
Williams, R.E., et al, Alaska Oil and Gas Association, AOGA No.58, Exxon Production Research Company, Sep. 21, 1983, 49p.
Kruk, K.F.
Oil spills, Oil recovery, Ice conditions, Sea ice distribution, Countermeasures, Equipment, Ships, Beaufort Sea.

42-966
Problems of Quaternary and Holocene snow line calculations.
Heuberger, H., Paleolimnology of Lake Biwa and the Japanese Pleistocene, No.10, 1982, Kyoto. Edited by S. Horie. Eighth session of the IGCP, [1982], p.193-199, 20 refs.
Snow line, Quaternary deposits, Moraines, Paleoclimatology, Pleistocene, Mountains, Glaciers.

42-967
Detecting underground objects/utilities.
Hironaka, M.C., et al, MP 2281, Workshop [on] Facilitating Technology Advancement in the U.S. Construction Industry, Austin, TX, Oct. 28-29, 1987. Proceedings, [1987], p.36-43, 3 refs.
Bigl, S.R.
Underground facilities, Detection, Radar echoes, Measuring instruments, Penetration tests.
Hand-held detectors and ground penetrating radar systems have been field evaluated to determine their effectiveness in locating underground objects and utilities. The hand-held detectors are limited to locating either metallic or nonmetallic (by radio transmitter) lines and are best suited to tracing such lines. To trace such lines, at least a vague idea of their location must be known or a point of physical access must be available. Ground penetrating radar (GPR), on the other hand, has the capability to detect both metallic and nonmetallic objects without prior knowledge of their presence. However, as presently configured, GPRs have certain deficiencies that resulted in poor performance in field evaluation tests. The best system detected only 60% of the metallic and 36% of the nonmetallic objects that were present in our test site. We therefore have development efforts underway or completed to improve the capabilities of GPRs. These efforts include optimum GPR source signal, high-power focused antenna, and signal processing-image reconstruction software.

42-968
Infrared testing for leaks in new roofs.
Korhonen, C., MP 2282, Workshop [on] Facilitating Technology Advancement in the U.S. Construction Industry, Austin, TX, Oct. 28-29, 1987. Proceedings, [1987], p.49-54, 4 refs.
Roofs, Leakage, Infrared reconnaissance, Moisture detection, Thermal insulation, Temperature variations.
Newly constructed roofs can develop leaks as soon as they are built, but these leaks may not manifest themselves inside the building until after the warranty has expired. High resolution infrared scanners can be used during the warranty period to locate the wet insulation resulting from these leaks. When combined with detailed visual examination, infrared surveys can help to determine who is responsible for the leak. If the leak is the result of a design or workmanship error, then the building owner is saved the expense of pursuing remedial repairs on a new roof.

42-969
Analysis of model tests of pressure ridges failing against conical structures.
Wang, Y.S., *Exxon Production Research Company. Technical report*, Nov. 1979, EPR.31PR.79, Alaska Oil and Gas Association, AOGA No.96, 61p., 10 refs.
Pressure ridges, Offshore structures, Ice loads, Ice solid interface, Models, Tests, Ice pressure, Impact strength, Analysis (mathematics), Plasticity tests, Elastic properties.

42-970
Sea ice activity and pressure ridge growth in the vicinity of surcharged grounded ice islands UNAK 1 and UNAK 2.
McKay, A.R., Alaska Oil and Gas Association, AOGA, No.12, Institute of Arctic Environmental Engineering, Nov. 1969, 80p., 2 refs.
Pressure ridges, Ice islands, Ice loads, Ice pressure, Sea ice, Grounded ice, Interfaces.

42-971
Economic merit of using polymer-foam for preventing the freezing of ground. [Ekonomicheskaia tselesoobraznost' ispol'zovaniia polimernoĭ peny dlia predokhraneniia grunta ot promerzaniia],
Nabatov, A.B., et al, *Transportnoe stroitel'stvo*, Aug. 1987, No.8, p.6-8, In Russian.
Karpov, M.B., Druzhinin, S.A.
Soil freezing, Thermal insulation, Cellular plastics, Frost protection.

42-972
Floating, automotive crane for rivers. [Rechnoĭ samokhodnyĭ plavkran],
Kozlov, V.P., *Transportnoe stroitel'stvo*, Aug. 1987, No.8, p.34-36, In Russian.
Floating structures, Construction equipment, Cranes (hoists), River ice.

42-973
Prospects for using local construction materials in western Siberia. [Perspektivy ispol'zovaniia mestnykh stroitel'nykh materialov v Zapadnoĭ Sibiri],
Kashperiuk, P.I., *Stroitel'stvo truboprovodov*, Aug. 1987, No.7, p.11-13, In Russian. 5 refs.
Construction materials, Sands, Gravel, Clays, Permafrost distribution, Active layer, Frost penetration, Mining, Quarries, Continuous permafrost, Engineering geology.

42-974
What types of cooling systems should be built in compressor stations in northern regions. [Kakie sistemy okhlazhdeniia sleduet stroit' na kompressornykh stantsiiakh v severnykh raĭonakh strany?],
Savkin, P.S., *Stroitel'stvo truboprovodov*, Sep. 1987, No.9, p.25-27, In Russian.
Petroleum industry, Natural gas, Gas pipelines, Permafrost beneath structures, Thermal stresses, Artificial freezing, Artificial ice, Cooling systems.

42-975
New structural-geomorphological map of the bottom of the Arctic Ocean. [Novaia strukturno-geomorfologicheskaia karta dna Severnogo Ledovitogo okeana],
Kalinina, L.I., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, Sep.-Oct. 1987, No.5, p.46-52, In Russian. 17 refs.
Leont'ev, O.K., Luk'ianova, S.A., Solov'eva, G.D.
Ocean bottom, Geomorphology, Maps, Subglacial observations, Subglacial drainage, Ocean currents, Earth crust, Structural changes.

42-976
Delta-forming processes in the Yenisey River estuary influenced by economic development measures. [Protsessy del'toobrazovaniia v ust'evoĭ oblasti Eniseia i vliianie na nikh khoziaĭstvennykh meropriiatiĭ],
Korotaev, V.N., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, Sep.-Oct. 1987, No.5, p.72-77, In Russian. 11 refs.
Mikhaĭlov, V.N., Sidorchuk, A.IU.
Deltas, Estuaries, Hydrology, Permafrost distribution, Meteorological factors, Human factors.

42-977
Temperature field of rocks in permafrost areas and the structure of thermal balance (spatial characteristics). [Temperaturnoe pole gornykh porod v oblasti vechnoĭ merzloty i struktura teplovogo balansa],
Shpolianskaia, N.A., *Moscow. Universitet. Vestnik. Seriia 5 Geologiia*, Sep.-Oct. 1987, No.5, p.80-86, In Russian. 5 refs.
Permafrost thermal properties, Frozen rock temperature, Heat balance, Topographic effects, Slope orientation, Snow cover effect, Soil temperature, Tundra, Taiga.

42-978
Microelement accumulation by plants at watersheds of the taiga-permafrost zone. [Nakoplenie mikroelementov rasteniiami na vodorazdelakh merzlotno-taezhnoĭ zony],
Makhon'ko, K.P., et al, *Ekologiia*, July-Aug. 1987, No.4, p.19-24, In Russian. 10 refs.
Vertinskiĭ, IU.K., Raspopova, T.G.
Taiga, Microelement content, Plant physiology, Permafrost distribution, Watersheds, Plant ecology, Plants (botany).

42-979
Shrubbery damage by phyllophagous invertebrates in some tundra ecosystems. [Povrezhdenie bespozvonochnymi-fillofagami kustarnikov v nekotorykh tundrovykh ekosistemakh],
Vil'chek, G.E., *Ekologiia*, July-Aug. 1987, No.4, p.71-73, In Russian. 7 refs.
Plants (botany), Vegetation patterns, Damage, Forest tundra, Mosses, Forest ecosystems, Tundra, Arctic landscapes.

42-980
Operational evaluation of frost resistance of welded steel structures of rebuilt power-industry objects. [Operativnaia otsenka khladostoĭkosti svarnykh stal'nykh konstruktsiĭ rekonstruiruemykh energoob"ektov],
Didenko, V.N., *Energeticheskoe stroitel'stvo*, Aug. 1987, No.8, p.15-17, In Russian. 4 refs.
Steel structures, Joints (junctions), Welding, Frost action, Brittleness, Frost resistance.

42-981
Injection-anchors for fastening power line supports. [In"ektsionnye ankery dlia zakrepleniia opor VL],
Lipkind, A.M., *Energeticheskoe stroitel'stvo*, Aug. 1987, No.8, p.30-32, In Russian. 3 refs.
Permafrost distribution, Paludification, Power line supports, Anchors, Grouting, Cements.

42-982
Using rod-anchors in construction of 110 kv overhead lines in the Yamburg area. [Opyt primeneniia sterzhnevykh ankerov pri stroitel'stve VL 110 kV v raĭone IAmburga],
Pylaev, E.L., et al, *Energeticheskoe stroitel'stvo*, Aug. 1987, No.8, p.48-49, In Russian. 2 refs.
Pavlov, A.M., Korshunov, V.V.
Power line supports, Anchors, Permafrost beneath structures, Continuous permafrost.

42-983
New roofing materials. [Novye krovel'nye materialy],
Paranin, V.M., *Energeticheskoe stroitel'stvo*, Aug. 1987, No.8, p.50-52, In Russian.
Roofs, Construction materials, Industrial buildings, Residential buildings.

42-984
Basis for the design of the top of stone-earth dams built in the Far North. [Obosnovaniia konstruktsiĭ grebnia kamenno-zemlianykh plotin vozvodimykh v raĭonakh Kraĭnego Severa],
Kuz'mina, S.A., et al, *Energeticheskoe stroitel'stvo*, Aug. 1987, No.8, p.72-74, In Russian. 6 refs.
Mukhetdinov, N.A.
Rock fills, Earth dams, Permafrost beneath structures, Design.

42-985
Antarctic. Committee reports No.11.
Bugaev, V.A., ed, Washington, U.S. National Science Foundation, 1974, 560p., TT-74-53004, Numerous refs. passim. For Russian original and abstracts see 7B-12313, 7E-12304, 7E-12305, 7F-12307 through 7F-12309, 7F-12311, 7F-12312, 7H-12314 through 7H-12317, 7I-12310, 7K-12301 through 7K-12303, and 7L-12306, or 28-204 through 28-209.
Glaciation, Ice sheets, Radioactive isotopes, Ice drills.
This is a translation of a number of papers in various disciplines: atmospheric physics, including F2 layer ionization and geomagnetic disturbances; geomorphology of the continent and structural features of the southern ocean floor; glaciology and limnology; foraminiferal studies of Northern and Southern hemispheres; and studies of human physiology, psychology and morbidity at antarctic stations.

42-986
Fjords: processes and products.
Syvitski, J.P.M., et al, New York, Springer, 1987, 379p., Refs. p.329-366.
Burrell, D.C., Skei, J.M.
Coastal topographic features, Glaciers, Icebergs, Fjords, Ice scoring, Sedimentation.

42-987
Experimental work on punching shear resistance of concrete structures for the Arctic.
Brian Watt Associates, Inc., Alaska Oil and Gas Association, AOGA project No.152, Nov. 1982, 2 vols., 13 refs. Vol.2 contains appendices.
Concrete strength, Shear strength, Offshore structures, Cold weather construction, Reinforced concretes, Design, Loads (forces), Models, Concrete structures.

42-988
Towed resistance trials in ice of the USCGC *Mobile Bay* (WTGB103).
Phillips, L.D., et al, *Transport Canada. Report*, Sep. 1986, TP 8487E, 2 vols. (148p. + appends.), With French summary. 31 refs.
Zahn, P.Z.
Ice navigation, Icebreakers, Ice strength, Velocity, Ice cover thickness, Tests, Forecasting.

42-989
Sensing road surface temperatures with infrared techniques.
Lindqvist, S., *Goteborg, Sweden. Universitet. Naturgeografiska institutionen. GUNI rapport*, 1987, No.23, 22p., 13 refs.
Roofs, Surface temperature, Infrared photography, Temperature measurement.

42-990
Comparison of snow cover liquid water measurement techniques.
Boyne, H.S., et al, *Water resources research*, Oct. 1987, 23(10), MP 2283, p.1833-1836, 19 refs.
Fisk, D.J.
Snow water content, Unfrozen water content, Snow mechanics, Meltwater, Microwaves, Remote sensing, Temperature measurement, Seepage.
The amount and distribution of liquid water are important for assessing the mechanical strength, meltwater generation, and meltwater transmission in snow. Liquid water also has a profound effect on the performance of active and passive remote sensing systems operating in the microwave and millimeter wave region of the electromagnetic spectrum. New methods of measuring liquid water have been reported which show considerable promise. Our purpose is to address the question of measurement equivalence by comparing the three direct methods of freezing calorimetry, alcohol calorimetry, and dilution and by comparing the precision of a calibrated capacitance probe with one of the direct methods. All comparisons were made in a laboratory cold room with snow having a mass liquid water content of 0-14 mkg per 100 mkg of snow. The comparisons show that the methods are equivalent with an uncertainty of about 1.8 mkg per 100 mkg of snow. However, the operational achievement of equivalence is strongly dependent on a variety of factors such as sample size, mixing of snow and working fluid, and operator skill.

42-991
Brines at low temperatures.
Brass, G.W., et al, Conference on Planetary Volatiles: a Lunar and Planetary Institute Topical Conference, Alexandria, MN, Oct. 9-12, 1982. [Proceedings], [1983], p.12-13, 2 refs.
Thurmond, V.L.
Extraterrestrial ice, Brines, Freezing points, Low temperature research.

42-992
Simulation of the costs of removing snow from county highways in Colorado.
Sherretz, L.A., et al, Denver, Colorado Dept. of Natural Resources, Weather modification Program, Mar. 1983, 39p., Refs. p.36-38.
Loehr, W.
Snow removal, Weather modification, Snow accumulation, Cost analysis, Cloud seeding, Road maintenance, Mountains, Snowfall, Winter maintenance.

42-993
Fourth Conference on Mountain Meteorology, Seattle, WA, Aug. 25-28, 1987.
Conference on Mountain Meteorology, 4th, Boston, MA, American Meteorological Society, 1987, 278p., Refs. passim. For selected papers see 42-994 through 42-997.
Meteorology, Icing, Mountains, Ice accretion, Topographic features, Meetings, Models.

42-994
Numerical investigation of flow with a density step over a ridge or under an ice keel.
Rowe, R.D., et al, Conference on Mountain Meteorology, 4th, Seattle, WA, Aug. 25-28, 1987. [Proceedings], Boston, MA, American Meteorological Society, 1987, p.115-119, 16 refs.
Jameel, M.I., Topham, D.R.
Air flow, Ice cover effect, Fluid flow, Windbreaks, Topographic features, Mathematical models.

42-995
Impact of winds over the antarctic plateau on Southern Hemisphere circulations.
Nogués-Paegle, J., et al, Conference on Mountain Meteorology, 4th, Seattle, WA, Aug. 25-28, 1987. [Proceedings], Boston, MA, American Meteorological Society, 1987, p.238-240, 3 refs.
Stucki, S.C.
Wind (meteorology), Atmospheric circulation, Ice cover effect, Albedo.
After a review of ice cover and solar radiation interaction, and the resulting formation of katabatic winds, a study of the wintertime characteristics of atmospheric flows over Antarctica, based on 6 yr. gridded data obtained from the European Center for Medium Range Weather Forecasts, is reported. Results are compared with those obtained from a linearized shallow water equation model. Differences between these solutions and winter averaged flows suggest a classification method to isolate persistent circulations over mid and high latitudes of the Southern Hemisphere.

42-996
Observations of large scale icing events measured from ridgetop in the central Sierra Nevada Mountains.
Heggli, M., Conference on Mountain Meteorology, 4th, Seattle, WA, Aug. 25-28, 1987. [Proceedings], Boston, MA, American Meteorological Society, 1987, p.262-266, 3 refs.
Icing, Ice detection, Wind velocity, Ice accretion, Wind direction, Supercooling, Winter, United States—California—Sierra Nevada.

42-997
Climatology of rime accretion in the Green and White Mountains.
Ryerson, C.C., MP 2284, Conference on Mountain Meteorology, 4th, Seattle, WA, Aug. 25-28, 1987. [Proceedings], Boston, MA, American Meteorological Society, 1987, p.267-272, 9 refs.
Icing, Ice accretion, Hoarfrost, Mountains, Climatology, Statistical analysis.

42-998
Deformation induced recrystallization of ice: the application of *in situ* experiments.
Wilson, C.J.L., *American Geophysical Union. Geophysical monograph*, 1986, No.36, Mineral and rock deformation: laboratory studies, edited by B.E. Hobbs and H.C. Heard, p.213-232, 72 refs.
DLC TA706.5.M55 1986
Ice deformation, Recrystallization, Ice structure.
Evidence for nucleation in natural and experimentally deformed polycrystalline aggregates of ice is discussed, and the observation of dynamic recrystallization during *in situ* experiments is described. Deformation in the temperature range above -5 C produces marked adjustments along pre-existing grain boundaries, slip and grain rotation on (0001), deformation band and kink band formation, new grain nucleation and boundary migration. The dominant nucleation mechanism and accompanying changes in grain shape and size involve dynamic recrystallization by rotation of subgrains and/or bulging of new high angle or pre-existing boundaries, through a process of migration recrystallization. There is little evidence for a distinct intercrystalline nucleation mechanism, even though many of the intracrystalline nuclei are dominantly on the margins of the host grain. Thin sections from Law Dome Samples are used in the discussions on deformation mechanisms and recrystallization nuclei of natural ice. (Auth. mod.)

42-999
Phenomenon of "overheating" and the formation of a two-phase zone during phase transformations in frozen ground. [IAvlenie "peregreva" i obrazovanie dvukhfaznoĭ zony pri fazovykh perekhodakh v merzlykh gruntakh],
Maksimov, A.M., et al, *Akademiia nauk SSSR. Doklady*, 1987, 294(5), p.1117-1121, In Russian. 7 refs.
Tsypkin, G.G.
Phase transformations, Mathematical models, Unfrozen water content, Permafrost structure, Ground ice, Ice structure, Heat balance, Thermodynamic properties.

42-1000
Numerical experiments on glacial climatic variations. [Chislennye eksperimenty po lednikovym kolebaniiam klimata],
Verbitskiĭ, M.IA., et al, *Akademiia nauk SSSR. Doklady*, 1987, 295(5), p.1077-1080, In Russian. 6 refs.
Monin, A.S., Chalikov, D.V.
Mathematical models, Climatic changes, Glaciation, Land ice, Ice accretion, Ice cover thickness, Ice shelves, Sea ice distribution.

42-1001
Marginal channels and peculiarities of development of erosion in glacial valleys of Hangay (Mongolia). [Marginal'nye kanaly i osobennosti razvitiia erozii v lednikovykh dolinakh Khangaia (Mongoliia)],
Korzhuev, S.S., *Akademiia nauk SSSR. Doklady*, 1987, 295(6), p.1423-1426, In Russian. 10 refs.
Glacial erosion, Glacial deposits, Glacier flow, Glacial hydrology, Glacial rivers, Glacier ice, Ice cover thickness.

42-1002
Moisture redistribution between oceans through the snow cover of continents (the Northern Hemisphere as an example). [Pereraspredelenie vlagi mezhdu okeanami cherez snezhnyĭ pokrov materikov (na primere severnogo polushariia)],
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Doklady*, 1987, 295(6), p.1460-1464, In Russian. 7 refs.
Krenke, A.N., Zverkova, N.M., Chernova, L.P.
Land ice, Snow cover distribution, Snow water equivalent, Glacial hydrology, Moisture transfer, Sea water, Ocean currents.

42-1003
Fiber-optic thermometer.
Riabov, A.S., et al, *Instruments and experimental techniques*, Jan.-Feb. 1987 (Pub. Aug. 87), 30(1,pt.2), p.235-239, Translated from Pribory i tekhnika eksperimenta. 7 refs.
Low temperature research, Temperature measurement, Measuring instruments.

42-1004
Miniature resistance thermometers based on GaAs filamentary crystals for the range of 0.4-300 K.
Varshava, S.S., et al, *Instruments and experimental techniques*, Jan.-Feb. 1987 (Pub. Aug. 87), 30(1,pt.2), p.239-242, Translated from Pribory i tekhnika eksperimenta. 9 refs.
Low temperature research, Temperature measurement, Measuring instruments.

42-1005
Group properties and invariant solutions of equations describing two-dimensional flow of glaciers.
Akhmedova, F.Kh., et al, *Journal of appliéd mechanics and technical physics*, Jan.-Feb. 1987 (Pub. July 87), 28(1), p.79-84, Translated from Zhurnal prikladnoĭ mekhaniki i tekhnicheskoĭ fiziki. 9 refs.
Chugunov, V.A.
Glacier flow, Ice mechanics, Mathematical models.

42-1006
Nonsteady-state radiant-conductive heat exchange in a semitransparent medium with phase transition.
Burka, A.L., et al, *Journal of applied mechanics and technical physics*, Jan.-Feb. 1987 (Pub. July 87), 28(1), p.91-93, Translated from Zhurnal prikladnoĭ mekhaniki i tekhnicheskoĭ fiziki. 6 refs.
Rubstov, N.A., Savvinova, N.A.
Solar radiation, Radiant heating, Ice, Phase transformations, Boundary value problems.

42-1007
Indicators of reliability of power diodes in direct-current ice-melting installations on overhead power lines. [Pokazateli nadezhnosti silovykh diodov ustanovok dlia plavki gololeda postoiannym tokom na VL],
Izotov, M.E., et al, *Elektricheskie stantsii*, Aug. 1986, No.8, p.52-54, In Russian. 3 refs.
Molodtsov, V.S., Seredin, M.M.
Power line icing, Ice prevention, Electric heating.

42-1008
Evaluation of low temperature effect on cyclic strength of anchor chains of semisubmersible drilling rigs. [Otsenka vliianiia nizkikh temperatur na tsiklicheskuiu prochnost' iakornykh tsepeĭ PPBU],
Shaposhnikov, V.M., et al, *Sudostroenie*, Oct. 1987, No.10, p.14-16, In Russian. 9 refs.
Khrapov, A.S.
Steels, Anchors, Frost action, Offshore drilling, Offshore structures.

42-1009
Measuring the resistivity of grounding devices in inhomogeneous ground. [Izmerenie soprotivleniia zazemliaiushchikh ustroĭstv v neodnorodnykh gruntakh],
Kats, E.L., et al, *Elektricheskie stantsii*, Feb. 1987, No.2, p.52-55, In Russian. 7 refs.
Tselebrovskiĭ, IU.V.
Electrical grounding, Permafrost physics, Electrical properties.

42-1010
Improving the methods of determining climatic loads when designing overhead communication lines. [Sovershenstvovanie metodov opredeleniia klimaticheskikh nagruzok pri proektirovanii VL],
Narozhnyĭ, V.B., et al, *Elektricheskie stantsii*, May 1987, No.5, p.57-60, In Russian. 8 refs.
Kniazhevskaia, S.IA., Levkina, N.E.
Power line icing, Ice loads, Wind factors, Wind velocity.

42-1011
Providing for reliable performance of overhead power lines in areas of icing. [Obespechenie nadezhnosti raboty VL v gololednykh zonakh],
Usmanov, F.Kh., et al, *Elektricheskie stantsii*, Apr. 1986, No.4, p.50-52, In Russian. 2 refs.
Livshits, A.L.
Power line icing, Ice prevention, Electric heating.

42-1012
Performance of fixing instruments at high transient resistances of frozen ground. [Rabota fiksiruiushchikh priborov pri bol'shikh perekhodnykh soprotivleniiakh merzlogo grunta],
Motrich, A.V., *Elektricheskie stantsii*, Apr. 1986, No.4, p.53-56, In Russian. 5 refs.
Power lines, Damage, Indicating instruments.

42-1013
Calculation of melting slopes of ash-dump embankments. [Raschet ottaivaiushchikh otkosov damb zolootvalov],
Ogarkov, A.A., et al, *Elektricheskie stantsii*, June 1986, No.6, p.40-43, In Russian. 6 refs.
Ivanov, A.A.
Earth dams, Embankments, Permafrost beneath structures, Continuous permafrost, Slope processes, Melting.

42-1014
Areas of application of winter concreting methods. [Oblasti primeneniia sposobov zimnego betonirovaniia],
Gendin, V.IA., et al, *Beton i zhelezobeton*, May 1987, No.5, p.12-13, In Russian.
Kuz'min, V.K.
Winter concreting, Concrete aggregates, Cements, Concrete admixtures, Concrete hardening, Concrete freezing, Concrete strength.

42-1015
Concreting with continuous electric heating of the mixture. [Betonirovanie s nepreryvnym elektrorazogrevom smesi],
Arben'ev, A.S., *Beton i zhelezobeton*, July 1987, No.7, p.22-23, In Russian. 4 refs.
Precast concretes, Concrete curing, Concrete heating, Electric heating, Concrete strength, Concrete hardening, Large panel buildings.

42-1016
Working tool of a ripper with successive arrangement of ripping teeth. [Rabochiĭ organ rykhlitelia s posledovatel'nym raspolozheniem rykhliashchikh zub'ev],
Khmara, L.A., et al, *Mekhanizatsiia stroitel'stva*, Sep. 1987, No.9, p.16-17, In Russian. 2 refs.
Shatov, S.V., Goncharenko, N.P., Varakuta, V.P.
Earthwork, Excavation, Frozen ground, Construction equipment.

42-1017
Simplified method for calculating the attenuation over the line circuit of carrier communication channels on iced overhead transmission lines. [Uproshchennyĭ metod rascheta zatukhaniia lineĭnogo trakta kanalov vysokochastotnoĭ sviazi po vozdushnoĭ linii pri gololede],
Shkarin, IU.P., *Elektrichestvo*, Feb. 1987, No.2, p.12-15, In Russian. 6 refs.
Power line icing, Ice loads, Performance, Analysis (mathematics).

42-1018
Proper sprinkling of water for melting snow on roofs.
Saito, T., et al, *Nagaoka Technical College. Research reports*, Sep. 1985, 21(3), p.139-147, In Japanese with English summary. 5 refs.
Aoyagi, M.
Snow melting, Snow removal, Roofs, Sprinklers.

42-1019
Estimation method of the roof snow load.
Kobori, T., et al, *Kanazawa University. Faculty of Technology. Memoirs*, Oct. 1985, 18(2), p.77-86, In Japanese with English summary. 11 refs.
Kido, T., Chikata, Y.
Snow loads, Roofs, Snow accumulation, Snow density.

42-1020
Laboratory measurements and computations of powder avalanches. [Staublawinen; Labormessungen und Berechnungen],
Hermann, F., et al, *Schweizerische Zeitschrift für Forstwesen*, Aug. 1987, 138(8), p.715-728, In German with French summary.
Hutter, K.
Avalanche modeling, Avalanche mechanics.

42-1021
B.F. Kuhn's contribution to the knowledge of glaciers 200 years ago. [B.F. Kuhns Beitrag zur Gletscherkunde vor 200 Jahren],
Röthlisberger, H., *Geographica helvetica*, 1987, 42(2), p.147-152, In German with English summary. 4 refs.
Glaciology, History.

42-1022
Comparison of wet and dry growth in artificial and flight icing conditions.
Hansman, R.J., Jr., et al, *Journal of thermophysics and heat transfer*, July 1987, 1(3), p.215-221, 17 refs.
Kirby, M.S.
Ice accretion, Aircraft icing, Wind tunnels.

42-1023
Local heat-transfer coefficients of simulated smooth glaze ice formations on a cylinder.
Pais, M., et al, *Journal of thermophysics and heat transfer*, Apr. 1987, 1(2), p.117-121, 12 refs.
Singh, S.N.
Ice accretion, Glaze, Aircraft icing, Wind tunnels, Heat transfer.

42-1024
Computation of heat transfer with solid/liquid phase change including free convection.
Schneider, G.E., *Journal of thermophysics and heat transfer*, Apr. 1987, 1(2), p.136-145, 19 refs.
Heat transfer, Phase transformations, Stefan problem, Analysis (mathematics).

42-1025
Generalized phase change model for melting and solidification with internal heat generation.
Chan, S.H., et al, *Journal of thermophysics and heat transfer*, Apr. 1987, 1(2), p.171-174, 9 refs.
Hsu, K.Y.
Phase transformations, Heat transfer, Analysis (mathematics).

42-1026
Maximum lumpiness of ground for the performance of construction excavators. [O maksimal'noĭ kuskovatosti gruntov pri rabote stroitel'nykh ekskavatorov],
Beliakov, IU.I., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1981, Vol.31, p.10-15, In Russian. 3 refs.
Ovcharenko, V.A., Galimullin, V.A.
Earthwork, Frozen ground, Construction equipment, Excavation.

42-1027
Problems in studying ice cutting processes. [Zadachi issledovaniia protsessa rezaniia l'da],
Vetrov, IU.A., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1982, Vol.31, p.29-34, In Russian. 4 refs.
Stanevskiĭ, V.P., Sosevich, IU.V.
Icebound rivers, Ice cover thickness, Ice cutting, Drilling.

42-1028
Scale effect in testing ground samples for compression. [Masshtabnyĭ effekt pri ispytanii obraztsov grunta na szhatie],
Moiseenko, V.G., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1982, Vol.31, p.44-48, In Russian. 3 refs.
Shemet, I.A.
Clays, Lake ice, Tests, Compressive properties, Plasticity tests, Brittleness.

42-1029
Loosening seasonally frozen ground by the parallel lane method. [Rykhlenie merzlykh gruntov sezonnogo promerzaniia metodom parallel'nykh prokhodov],
Kislenko, A.A., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1982, Vol.31, p.49-51, In Russian. 4 refs.
Bazhan, V.T., Shakhov, V.S.
Frozen ground strength, Seasonal freeze thaw, Earthwork, Trenching, Equipment, Frost penetration.

42-1030
Methods of classifying frozen ground according to excavation difficulty. [Metodika postroeniia klassifikatsiĭ merzlykh gruntov po trudnosti razrabotki],
Leshchiner, V.B., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1985, Vol.38, p.14-19, In Russian. 4 refs.
Miterev, G.I.
Earthwork, Trenching, Frozen ground strength, Classifications, Clays, Sands, Loams.

42-1031
Attachment to a powerful excavator for frozen ground. [Dinamicheskaia pristavka k moshchnomu rykhliteliu merzlykh gruntov],
Kichigin, A.F., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1985, Vol.38, p.35-39, In Russian. 2 refs.
Earthwork, Excavation, Equipment, Frozen ground, Mathematical models.

42-1032
Using ball-die in determining frozen ground resistance to loosening. [Opredelenie soprotivleniia merzlykh gruntov rykhleniiu s pomoshch'iu sharikovogo shtampa],
Kislenko, A.A., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1985, Vol.38, p.40-43, In Russian. 3 refs.
Tanin-Shakhov, A.V., Sviridenko, B.V.
Frozen ground strength, Tests, Excavation, Mathematical models.

42-1033
Machines equipped with roller-blades for continuous layer-by-layer excavation of perennially frozen ground. [Mashina s otval'no-katkovym oborudovaniem dlia nepreryvnoi posloinoi razrabotki mnogoletnemerzlykh gruntov],
Krylov, V.V., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1985, Vol.38, p.50-53, In Russian. 3 refs.
Utkin, A.I.
Frozen ground strength, Earthwork, Excavation, Equipment, Permafrost, Analysis (mathematics).

42-1034
Dependence of the force of cutting ice on geometric conditions of the process. [Zavisimost' sily rezaniia l'da ot geometricheskikh uslovii protsessa],
Stanevskii, V.P., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1985, Vol.38, p.58-60, In Russian. 2 refs.
Sosevich, IU.V.
Lake ice, Ice cutting, Experimentation, Equipment.

42-1035
Seventh annual EOSAEL/TWI Conference; Proceedings.
Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 7th, Las Cruces, NM, Dec. 2-4, 1986, U.S. Army Atmospheric Sciences Laboratory, 1987, 840p. (3 vols.), Refs. passim. For selected papers see 42-1036 through 42-1039.
Ice accretion, Icing, Military operations, Climatic factors, Meetings, Mountains, Ice fog, Meteorological instruments.

42-1036
Tactical weather intelligence for artillery.
Barber, T.L., et al, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 7th, Las Cruces, NM, Dec. 2-4, 1986. Proceedings, U.S. Army Atmospheric Sciences Laboratory, 1987, p.53-61, 4 refs.
Yee, Y.P., Measure, E.M., Larson, D.R.
Military operation, Remote sensing, Climatic factors, Temperature distribution, Air temperature, Atmospheric density, Microwaves.

42-1037
Meteorological system performance in icing conditions.
Bates, R.E., MP 2285, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 7th, Las Cruces, NM, Dec. 2-4, 1986. Proceedings, U.S. Army Atmospheric Sciences Laboratory, 1987, p.73-86, 5 refs.
Ice formation, Icing, Meteorological instruments, Hoarfrost, Models, Climatic factors, Air temperature, Freeze thaw cycles.
Adverse weather that induces riming and glaze formations severely affects most conventional meteorological field sensors and frequently causes system failure. Such conditions include temperatures near or just below freezing, frozen precipitation and excessive humidity. These conditions usually accompany major synoptic events which in most cases go unrecorded because of 1) the remoteness of the high elevations where extreme icing and wind normally occur, and 2) the failure of the instrumentation required to characterize the adverse weather.

42-1038
N-ROSS satellite sensing of the maritime environment.
Goroch, A.K., Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 7th, Las Cruces, NM, Dec. 2-4, 1986. Proceedings, U.S. Army Atmospheric Sciences Laboratory, 1987, p.143-147.
Marine meteorology, Ice edge, Remote sensing, Sea ice distribution, Microwaves.

42-1039
Extinction coefficient for a distribution of ice fog particles.
Jordan, R., MP 2286, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 7th, Las Cruces, NM, Dec. 2-4, 1986. Proceedings, U.S. Army Atmospheric Sciences Laboratory, 1987, p.527-539, 15 refs.
Ice fog, Infrared radiation, Electromagnetic properties, Attenuation, Particle size distribution, Mathematical models.
An approximation model is derived for the attenuation of visible and infrared radiation through ice fog. Assuming spherical particles and single scattering, a formula for estimating the extinction efficiency factor has been developed by combining the approaches of Hart-Montroll and Nussenzveig-Wiscombe. With the use of a Maxwell function to describe the size distribution of ice fog particles, a theoretical integration over the distribution is possible. The resulting extinction coefficient is a function of the mode radius of the distribution, the wavelength of the incident radiation, and the complex refractive index of ice. Its simple formulation provides an efficient means of scaling infrared to visible attenuation.

42-1040
Engineering-geological properties of bottom deposits of the World Ocean. [Inzhenerno-geologicheskie svoistva donnykh otlozhenii Mirovogo okeana],
Neizvestnov, IA.V., ed, Leningrad, 1985, 86p., In Russian. For selected papers see 42-1041 and 42-1042. Refs. passim.
Ocean environments, Sea water freezing, Bottom sediment, Frost penetration, Unfrozen water content, Water chemistry, Natural gas, Clathrates, Crystal growth, Hydrothermal processes, Arctic Ocean.

42-1041
Cryogeothermal problems in studying the Arctic Ocean. [Kriogeotermicheskie problemy pri issledovanii Severnogo Ledovitogo okeana],
Neizvestnov, IA.V., et al, Inzhenerno-geologicheskie svoistva donnykh otlozhenii Mirovogo okeana (Engineering-geological properties of bottom deposits of the World Ocean) edited by IA.V. Neizvestnov, Leningrad, 1985, p.37-50, In Russian. 13 refs.
Solov'ev, V.A., Ginsburg, G.D.
Ocean environments, Permafrost origin, Subsea permafrost, Hydrothermal processes, Sea water freezing, Water chemistry, Natural gas, Clathrates, Crystal growth.

42-1042
Physical, mechanical and thermophysical properties of bottom deposits in the southeastern Barents and southwestern Kara seas. [Fiziko-mekhanicheskie i teplofizicheskie svoistva donnykh otlozhenii iugo-vostochnoi chasti Barentseva i iugo-zapadnoi chasti Karskogo morei],
Maslov, A.D., Inzhenerno-geologicheskie svoistva donnykh otlozhenii Mirovogo okeana (Engineering-geological properties of bottom deposits of the World Ocean) edited by IA.V. Neizvestnov, Leningrad, 1985, p.51-63, In Russian. 2 refs.
Sea water freezing, Temperature measurement, Bottom sediment, Frost penetration, Salinity, Subsea permafrost, Unfrozen water content, Brines, Frozen rock temperature, Ocean environments, Measuring instruments, Arctic Ocean.

42-1043
Possible climatic warm-up toward the beginning of XXI century and its influence on melting of arctic sea ice. [Vliianie vozmozhnogo potepleniia klimata k nachalu XXI stoletiia na taianie morskikh l'dov v Arktike],
Efimova, N.A., *Gosudarstvennyi gidrologicheskii institut. Trudy*, 1985, Vol.317, p.56-63, In Russian. 28 refs.
Ice melting, Climatic changes, Sea ice distribution, Ice cover, Polar regions, Arctic Ocean.

42-1044
Snow physics, avalanches, glacial mudflows. [Fizika snega, laviny, seli],
Runich, A.V., ed, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.62, 124p., In Russian. For selected papers see 42-1045 through 42-1049. Refs. passim.
Snow impurities, Avalanche formation, Snow cover structure, Avalanche triggering, Snow cover stability, Avalanche mechanics, Snow physics, Research projects, Measuring instruments, Pollution.

42-1045
Special-purpose forecasts of avalanche danger for artificial triggering. [Spetsializirovannye prognozy lavinnoi opasnosti dlia iskusstvennogo obrusheniia lavin],
Bolov, V.R., *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.62, p.3-10, In Russian. 4 refs.
Avalanche forecasting, Avalanche triggering, Snow depth, Snow cover distribution, Snow cover stability, Avalanche formation, Meteorological data.

42-1046
Electromagnetic radio-frequency emission of snow avalanches. [Elektromagnitnoe radioizluchenie snezhnykh lavin],
Zalikhanov, M.Ch., et al, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.62, p.10-14, In Russian. 3 refs.
Avalanche triggering, Avalanche mechanics, Radiation measuring instruments, Snow physics, Research projects.

42-1047
Origin of pollution on the glaciers of Central Caucasus. [O mekhanizme formirovaniia zagriaznenii na lednikakh Tsentral'nogo Kavkaza],
Kerimov, A.M., *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.62, p.33-37, In Russian. 6 refs.
Air pollution, Water pollution, Ice composition, Snow composition, Snow impurities, Rain, Glacier ice, Chemical composition, Snow cover distribution.

42-1048
Relaxation properties of snow. [Relaksatsionnye svoistva snega],
Bagov, M.M., et al, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.62, p.62-71, In Russian. 7 refs.
El'mesov, A.M.
Snow creep, Snow physics, Snow elasticity, Avalanche formation, Relaxation (mechanics), Snow cover stability, Measuring instruments, Rheology, Settlement (structural).

42-1049
Laser spectroscopy of organic matter dissolved in snow cover. [Lazernaia spektroskopiia rastvorennogo organicheskogo veshchestva v snezhnom pokrove],
Bekkiev, A.IU., et al, *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1985, Vol.62, p.116-119, In Russian. 4 refs.
Kerimov, A.M.
Snow composition, Measuring instruments, Sampling, Snow impurities, Lasers, Chemical composition, Environmental protection, Snow cover structure.

42-1050
Biogeographic investigations in the Lake Baykal basin. [Biogeograficheskie issledovaniia v basseine ozera Baikal],
Belov, A.V., ed, Irkutsk, 1986, 127p., In Russian. For selected papers see 42-1051 and 42-1052. Refs. passim.
Liamkin, V.F., ed.
Landscape types, Alpine tundra, Taiga, Meadows, Cryogenic soils, Vegetation patterns, Lakes, Mapping, River basins.

42-1051
Results of botanical-geographic studies in the southern Lake Baykal area. [Nekotorye rezul'taty botaniko-kartograficheskikh issledovanii iuzhnogo Pribaikal'ia],
Medvedev, IU.O., Biogeograficheskie issledovaniia v basseine ozera Baikal (Biogeographic investigations in the Lake Baykal basin) edited by A.V. Belov and V.F. Liamkin, Irkutsk, 1986, p.5-40, In Russian. 35 refs.
Deserts, Plant ecology, Alpine landscapes, Meadows, Slope orientation, Vegetation patterns, Mapping, Taiga, Charts, Plant physiology, Biomass, Ecosystems, Alpine tundra.

42-1052
Landscape and hydrological regionalization of Transbaikal. [Landshaftno-gidrologicheskoe raionirovanie Zabaikal'ia],
Petrov, A.V., Biogeograficheskie issledovaniia v basseine ozera Baikal (Biogeographic investigations in the Lake Baykal basin) edited by A.V. Belov and V.F. Liamkin, Irkutsk, 1986, p.114-124, In Russian. 11 refs.
Landscape types, Permafrost distribution, Mapping, Deserts, Alpine landscapes, Forests, Swamps, Hydrology, Cryogenic soils, Stream flow, Runoff.

42-1053
Flora and vegetation of standard and protected territories. [Flora i rastitel'nost etalonnykh i okhraniaemykh territorii],
Gorchakovskii, P.L., ed, Sverdlovsk, 1986, 149p., In Russian. For selected papers see 42-1054 through 42-1056. Refs. passim.
Alpine tundra, Deserts, Rock streams, Vegetation patterns, Lichens, Cryogenic soils, Plant ecology, Plant physiology, Ecosystems.

42-1054
High-altitude distribution of higher vascular plants and life forms on the Koe'vinskiy Kamen' mountain (northern Ural Mountains). [Vysotnoe raspredelenie vysshikh sosudistykh rastenii i ikh zhiznennykh form na gore Koe'vinskii Kamen' (Severnyi Ural)],
Salmina, N.P., et al, Flora i rastitel'nost' etalonnykh i okhraniaemykh territorii (Flora and vegetation of standard and protected territories) edited by P.L. Gorchakovskii, Sverdlovsk, 1986, p.59-77, In Russian. 13 refs.
Mineeva, O.N.
Alpine tundra, Slope orientation, Snow cover distribution, Deserts, Vegetation patterns, Plant ecology, Taiga, Ecosystems, Cryogenic soils.

42-1055
High-altitude distribution of lichens on the Koe'vinskiy Kamen' mountain. [Vysotnoe raspredelenie lishainikov na gore Koe'vinskii kamen'],
Magomedova, M.A., Flora i rastitel'nost' etalonnykh i okhraniaemykh territorii (Flora and vegetation of standard and protected territories) edited by P.L. Gorchakovskii, Sverdlovsk, 1986, p.103-118, In Russian. 6 refs.
Rock streams, Alpine tundra, Lichens, Frost weathering, Ecosystems, Slope orientation, Vegetation patterns.

42-1056
Productivity of cryophyllic meadows of the Polar Ural Mountains. [Produktivnost' kriofil'nykh lugov Poliarnogo Urala],
Igosheva, N.I., Flora i rastitel'nost' etalonnykh i okhraniaemykh territorii (Flora and vegetation of standard and protected territories) edited by P.L. Gorchakovskii, Sverdlovsk, 1986, p.140-143, In Russian. 11 refs.
Meadows, Biomass, Alpine tundra, Cryogenic soils, Plant ecology, Ecosystems, Polar regions, Arctic landscapes.

42-1057
Soil and botanical studies in the subarctic Kola Peninsula. [Pochvenno-botanicheskie issledovaniia v Kol'skoi Subarktike],
Andreev, G.N., ed, Apatity, 1986, 106p., In Russian. For selected papers see 42-1058 and 42-1059. Refs. passim.
Mosses, Arctic landscapes, Introduced plants, Plant ecology, Plant physiology, Ecosystems, Subpolar regions, Cryogenic soils, USSR—Kola Peninsula.

42-1058
Bryophyte flora of the Rybachiy and Sredniy peninsulas in the Murmansk region. [K flore brievykh mkhov poluostrovov Rybachii i Srednii Murmanskoi oblasti],
Likhachev, A.IU., Pochvenno-botanicheskie issledovaniia v Kol'skoi Subarktike (Soil and botanical studies in the subarctic Kola Peninsula) edited by A.IU. Likhachev, Apatity, 1986, p.10-23, In Russian. 6 refs.
Forest tundra, Vegetation patterns, Mosses, Shores, Plant ecology, Ecosystems, Barents Sea.

42-1059
Respiration of introduced plants in the Khibiny mountains. [O dykhanii introdutsirovannykh rastenii v Khibinakh],
Lokteva, T.N., Pochvenno-botanicheskie issledovaniia v Kol'skoi Subarktike (Soil and botanical studies in the subarctic Kola Peninsula) edited by A.IU. Likhachev, Apatity, 1986, p.47-59, In Russian. 11 refs.
Plant physiology, Introduced plants, Photosynthesis, Plant ecology, Alpine landscapes, Arctic landscapes, Cryogenic soils.

42-1060
Sixth annual EOSAEL/TWI Conference: Proceedings.
Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 6th, Las Cruces, NM, Dec. 3-5, 1985, White Sands Missile Range, U.S. Army Atmospheric Sciences Laboratory, Feb. 1986, 639p. (2 vol.), Refs. passim. For selected papers see 42-1061 through 42-1064.
Snowfall, Military operation, Unfrozen water content, Snow optics, Haze, Fog, Cloud physics, Temperature effects, Meetings.

42-1061
Theoretical liquid water content model for moist haze and associated subcloud temperature, relative humidity, and pressure.
Rachele, H., et al, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 6th, Las Cruces, NM, Dec. 3-5, 1985. Proceedings, White Sands Missile Range, U.S. Army Atmospheric Sciences Laboratory, Feb. 1986, p.169-181, 6 refs.
Spalding, J.B.
Haze, Unfrozen water content, Cloud physics, Temperature effects, Humidity, Air temperature, Mathematical models, Atmospheric pressure, Saturation.

42-1062
Intensity of snowfall at the SNOW experiments.
Bates, R.E., et al, MP 2287, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 6th, Las Cruces, NM, Dec. 3-5, 1985. Proceedings, White Sands Missile Range, U.S. Army Atmospheric Sciences Laboratory, Feb. 1986, p.205-217, 7 refs.
King, G.G.
Snowfall, Snow water equivalent, Military operation, Snow accumulation, Visibility, Snowstorms, Remote sensing.
Snowfall intensities are currently classified by the National Weather Service Meteorological stations as "light, moderate and heavy" using visibility as a criterion. However, snowfall occurs with other obscurants, such as fog, making it extremely difficult to determine the actual snowfall intensity, therefore any criterion dependent on visibility alone should only be used as a guide. This paper presents a more quantitative method of determining snowfall using snow depth accumulation rate (cm/hr) and total hourly water equivalent (mm) as criteria. Intensive snowfall accumulation rates and water equivalent amounts were determined at the SNOW experiments at Fort Ethan Allen, Vermont, during the winters of 1980-81 and 1981-82, and at Camp Crayling, Michigan, during the winters of 1983-84 and 1984-85. These data are used to validate the preliminary snowfall intensity model.

42-1063
Theoretical and empirical gradient liquid water content models for moist haze, low stratus clouds, and fog.
Spalding, J.B., et al, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 6th, Las Cruces, NM, Dec. 3-5, 1985. Proceedings, White Sands Missile Range, U.S. Army Atmospheric Sciences Laboratory, Feb. 1986, p.427-444, 14 refs.
Rachele, H.
Unfrozen water content, Haze, Fog, Cloud physics, Temperature effects, Models.

42-1064
Verification of the snow algorithm in EOSAEL module XSCALE.
Shirkey, R., et al, Electro-Optical Systems Atmospheric Effects Library/Tactical Weather Intelligence (EOSAEL/TWI) Conference, 6th, Las Cruces, NM, Dec. 3-5, 1985. Proceedings, White Sands Missile Range, U.S. Army Atmospheric Sciences Laboratory, Feb. 1986, p.459-465, 4 refs.
Hutt, D.
Snow optics, Snow crystals, Snowfall, Snowflakes, Visibility, Transmission.

42-1065
Late Wisconsinan glaciation of New England.
Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, 242p., Refs. passim. For individual papers see 42-1066 through 42-1078.
Larson, G.J., ed, Stone, B.D., ed.
Glacial geology, Glaciation, Pleistocene, Moraines, Paleoclimatology, Glacial deposits, Glacier oscillation, Meetings, United States—New England.

42-1066
Pleistocene stratigraphy of Nantucket, Martha's Vineyard, the Elizabeth Islands, and Cape Cod, Massachusetts.
Oldale, R.N., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.1-34, Refs. p.32-34.
Glacial geology, Glaciation, Pleistocene, Moraines, Stratigraphy, Glacial deposits, Marine deposits, Ice sheets, Glacier oscillation, Radioactive age determination, United States—Massachusetts.

42-1067
Wisconsinan glaciation of Long Island, New York, to Block Island, Rhode Island.
Sirkin, L., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.35-59, Refs. p.57-59.
Glaciation, Geomorphology, Paleoclimatology, Stratigraphy, Moraines, Sediments, Landforms, Glacial deposits, Pleistocene, United States—New York.

42-1068
Recessional moraines and ice retreat in southeastern Connecticut.
Goldsmith, R., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.61-76, 20 refs.
Moraines, Glacier oscillation, Paleoclimatology, Topographic features, Pleistocene, Surface properties, United States—Connecticut.

42-1069
Modes of deglaciation of Connecticut: a review.
Black, R.F., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.77-100, 35 refs.
Glacial geology, Glaciation, Glacier oscillation, Pleistocene, Moraines, Paleoclimatology, Ice edge, Topographic features, Nunataks, United States—Connecticut.

42-1070
Nonsynchronous retreat of ice lobes from southeastern Massachusetts.
Larson, G.J., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.101-114, 25 refs.
Glacial geology, Moraines, Glaciation, Pleistocene, Glacier oscillation, Soil structure, Geomorphology, Paleoclimatology, Glacial lakes, United States—Massachusetts.

42-1071
Deglaciation of the southern portion of the Connecticut Valley of Massachusetts.
Larsen, F.D., et al, Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.115-128, 25 refs.
Hartshorn, J.H.
Glacial geology, Pleistocene, Glacier oscillation, Geomorphology, Ice sheets, Ice flow, Paleoclimatology, Glacial lakes, United States—Massachusetts.

42-1072
Deglacial history of glacial Lake Nashua, east-central Massachusetts.
Koteff, C., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.129-143, 13 refs.
Glacial lakes, Glacial geology, Glaciation, Glacial deposits, Pleistocene, Paleoclimatology, Meltwater, United States—Massachusetts—Nashua, Lake.

42-1073
Topographic control of the deglaciation of eastern Massachusetts: ice lobation and the marine incursion.
Stone, B.D., et al, Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.145-166, Refs. p.163-166.
Peper, J.D.
Glacial geology, Glaciation, Topographic features, Moraines, Pleistocene, Glacial lakes, Lacustrine deposits, Ice sheets, Glacier oscillation, United States—Massachusetts.

42-1074
Glacier Bay: a model for the deglaciation of the White Mountains in New Hampshire.
Goldthwait, R.P., et al, Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.167-181, 32 refs.
Mickelson, D.M.
Glacial geology, Glaciation, Glacier flow, Glacial deposits, Landforms, Mountains, Models, Nunataks, United States—New Hampshire—White Mountains.

42-1075
Deglacial history of western Vermont.
Connally, G.G., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.183-193, 46 refs.
Glacial geology, Glacier oscillation, Pleistocene, Glacial deposits, History, United States—Vermont.

42-1076
End moraines and the pattern of last ice retreat from central and south coastal Maine.
Smith, G.W., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.195-209, 22 refs.
Glacial geology, Moraines, Glacial deposits, Pleistocene, Coastal topographic features, Glacier oscillation, United States—Maine.

42-1077
Recession of the late Wisconsinan ice sheet in coastal Maine.
Thompson, W.B., Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.211-228, 32 refs.
Ice sheets, Glacial geology, Glacial deposits, Coastal topographic features, Marine deposits, Pleistocene, Glacier oscillation, United States—Maine.

42-1078
Numerical model for reconstruction and disintegration of the late Wisconsin glaciation in the Gulf of Maine.
Pastook, J.L., et al, Symposium: Late Wisconsinan Glaciation of New England, Philadelphia, PA, Mar. 13, 1980. Proceedings. Edited by G.J. Larson and B.D. Stone, Dubuque, IA, Kendall/Hunt Publishing Co., 1982, p.229-242, 16 refs.
Hughes, T.
Glaciation, Pleistocene, Glacier oscillation, Glacier flow, Glacier surges, Ice sheets, United States—Maine.

42-1079
Engineering study Arctic marine terminal facilities.
ESSO Research and Engineering Company, Florham Park, NJ, New York, Van Houten Associates, Inc., Nov. 1969, 54p. + figs.
Ports, Ice loads, Engineering, Ice conditions, Ice pressure, Temperature effects, Tanker ships, Ice breaking, Cost analysis.

42-1080
Development of water resources of southern Yakutia.
[Problemy vodokhoziaĭstvennogo osvoeniia IUzhnoĭ IAkutii],
Konstantinov, A.F., Yakutsk, SO AN SSSR, 1986, 135p., In Russian with abridged English table of contents enclosed. 113 refs.
Snow water equivalent, Water supply, River basins, Climatic factors, Records (extremes), Continuous permafrost, Sporadic permafrost, Discontinuous permafrost, Snow cover distribution.

42-1081
All-Union Symposium on Biogeography of the Subarctic Beringian Zone, 10th, Vladivostok, 1986. Proceedings. [Materialy],
Vsesoiuznyĭ simpozium Biogeografiia Beringiĭskogo sektora Subarktiki, 10th, Vladivostok, 1986, Vladivostok, 1986, 220p., In Russian. For selected paper see 42-1082.
Cherniavskiĭ, F.B., ed, Chereshnev, I.A., ed.
Periglacial processes, Tundra, Steppes, Geocryology, Paleoecology, Paleoclimatology, Ecosystems.

42-1082
On the existence of Beringian tundra-steppes. [K voprosu o sushchestvovanii beringiĭskikh tundrostepeĭ],
Kozhevnikov, IU.P., Vsesoiuznyĭ simposium Biogeografiia Beringiĭskogo sektora Subarktiki, 10th, Vladivostok, 1986 (All-Union Symposium on Biogeography of the Subarctic Beringian Zone, 10th, Vladivostok, 1986. Proceedings) edited by F.B. Cherniavskiĭ and I.A. Chereshnev, Vladivostok, 1986, p.45-51, In Russian. 28 refs.
Paleoecology, Paleoclimatology, Geocryology, Periglacial processes, Tundra, Steppes.

42-1083
Cutting force as affected by temperature changes in massive frozen ground. [Vlianie na silu rezaniia izmeneniĭ temperatury grunta v zamerzsheĭ tolshche],
Vetrov, IU.A., et al, *Gornye, stroitel'nye i dorozhnye mashiny*, 1981, Vol.32, p.3-8, In Russian. 2 refs.
Kislenko, A.A., Bazhan, V.T., Tanin-Shakhov, V.A.
DLC TN345.G678
Frozen ground strength, Frozen ground temperature, Frost penetration, Mathematical models.

42-1084
Arctic foreign policy for Canada.
Graham, G., *International perspectives*, Mar.-Apr. 1987, p.11-14.
International cooperation, Research projects.

42-1085
Yearbook of the Norwegian Polar Research Institute, 1986. [Arbok 1986],
Oslo. Norsk Polarinstitutt, Oslo, 1987, 40p.
Polar regions, Research projects.
Organizational structure, facilities, research programs, publications, meetings, and other details of the Norsk Polarinstitutt's activities are reported. Research pertinent to Antarctica included a projected 1987 Norwegian expedition to Peter Island with the main object of gathering data to construct a topographic map of this small island; geological investigations in Queen Maud Land; mapping the sea floor on the Weddell Sea shelf and upper slope; and study of tabular icebergs.

42-1086
Physiological ecology of bluegreen algal mats (modern stromatolites) in antarctic oasis lakes.
Parker, B.C., et al, *Archiv für Hydrobiologie. Supplement*, 1985, 71(1-2), Algological studies 38/39, edited by O. Lhotsky, p.331-348, Refs. p.346-348.
Wharton, R.A., Jr.
DLC QH301.A493Z
Photosynthesis, Algae, Ice cover effect, Limnology.
The only well-documented high latitude habitats of modern stromatolitic algal mats are the freshwater depths of 7 perennially ice-covered lakes of southern Victoria Land. Within these unusual lakes, 5 basic macromorphological types of mats occur and 4 are stromatolitic (three aerobic or oxygenic and one anaerobic or anoxygenic). Variables which control the mat growth rates and forms particularly include photosynthetically available radiation (PhAR), oxygen production and accumulation, calcite formation, and growth or gliding patterns of the predominant algal or microbial species. Estimated production rates of the 5 different mat types based on assumed annual PhAR, measured %PhAR reaching various depths, and estimates of quantum efficiency show a range of more than 3 orders of magnitude and at least partially explain the occurrence and distribution of these algal mats within these lakes. (Auth. mod.)

42-1087
Icelandic sea-ice record.
Kelly, P.M., et al, *Climate monitor*, Dec. 1985-Feb. 1986, 15(1), p.11-17, 22 refs.
Goodess, C.M., Cherry, B.S.G.
Sea ice distribution, Ice conditions, Climatic factors, Statistical analysis, Iceland.

42-1088
Evaluation of the Shasta waterless system as a remote site sanitation facility.
Martel, C.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1987, SR 87-16, 24p., ADA-186 000, 5 refs.
Sanitary engineering, Military facilities, Waste disposal, Tanks (containers).
The waterless toilet manufactured by Shasta Manufacturing, Inc., of Redding, California, was evaluated for possible use at remote military training sites and guard stations. A telephone survey of 6 recreational areas indicated that park personnel were generally pleased with the performance of these units. On-site visits did not encounter offensive odors. Proper ventilation and liquid level control were found to be key factors in successful operation. A rational approach to sizing these units was developed on the basis of local pan evaporation rates.

42-1089
Persistence of chemical agents on the winter battlefield. Part 1. Literature review and theoretical evaluation.
Leggett, D.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1987, CR 87-12, 20p., ADB-115 298, Refs. p.11-14.
Military operation, Chemical properties, Drops (liquids), Snow cover, Ice cover, Evaporation, Temperature gradients, Impurities.
Literature concerning persistence of chemical warfare agents and related chemicals in cold environments is analyzed. An existing model of droplet persistence is discussed in relation to evaporation theory and practical uncertainties. This model was questioned in the case of ice and snow-covered terrain—a new model may be needed, but the necessary experimental data for testing and validation are not yet available. Experimental evaporation data for chemicals on snow are needed as well as the solubilities of ice in the relevant chemicals. Since evaporation from ice is inferred to be significantly retarded, it was emphasized that the rates of chemical degradation need to be addressed under these conditions. Hydrolysis is a mechanism of agent degradation already experimentally demonstrated in ice. More experiments are needed under conditions realistically simulating agent dissemination over snow and ice covers. Photolysis is a third potential mechanism of agent dissipation. Theoretical and indirect experimental evidence suggest that it is a wider pathway. Because thermal activation is theoretically not required, it may proceed equally rapidly at low or high temperatures. Suggestions for relevant experiments—droplet evaporation and solubility tests, and tests of hydrolysis and photolysis of droplets on ice and snow surfaces—are made.

42-1090
Use of satellite pictures for mapping the ice conditions and surface temperatures in the Gulf of Bothnia.
Grönvall, H., et al, *Finland. Vesientutkimuslaitoksen. Julkaisuja*, 1986, No.68, Finnish-Swedish Seminar on the Gulf of Bothnia, 3rd, Pori, Finland, Aug. 20-21, 1984. Proceedings. Edited by P. Kangas and M. Rorsskähl, p.19-23, 1 ref.
Kalliosaari, S.
Ice conditions, Surface temperature, Remote sensing, Mapping, Bothnia, Bay.

42-1091
Ice load on the bow and nozzles of research vessel *Polarstern*. [Eisbelastung auf Vorschiff und Düsen von Forschungsschiff "Polarstern"],
Hoffmann, L., et al, *Schiffbautechnische Gesellschaft, Hamburg. Jahrbuch*, 1985, Vol.79, p.359-375, In German with English summary. 4 refs.
Müller, L.
Propellers, Ice navigation, Icebreakers, Ice loads, Ice floes, Impact strength, Measuring instruments.

42-1092
Development of novel icebreaking ships and peculiarities of the stresses on their steel structure by ice. [Entwicklung neuartiger eisbrechender Schiffe und Besonderheiten der Beanspruchung ihrer Stahlkonstruktion durch Eis],
Varges, G., et al, *Schiffbautechnische Gesellschaft, Hamburg. Jahrbuch*, 1985, Vol.79, p.377-398, In German with English summary, p.398. 4 refs.
Herkens, H.
Icebreakers, Ice loads, Ice navigation, Ice breaking, Design, Steel structures.

42-1093
Ice loads on a floating drilling platform. [Eisbelastung einer schwimmenden Bohrinsel],
Wessels, E., et al, *Schiffbautechnische Gesellschaft, Hamburg. Jahrbuch*, 1985, Vol.79, p.399-409, In German with English summary, p.409. 7 refs.
Iyer, S.H.
Offshore structures, Ice loads, Floating structures, Models, Tests, Offshore drilling.

42-1094
Measurements of performance in ice with model and full scale versions of RV *Polarstern*. [Leistungsmessungen im Eis am Modell und Grossausführung von "Polarstern"],
Hellmann, J.-H., *Schiffbautechnische Gesellschaft, Hamburg. Jahrbuch*, 1985, Vol.79, p.411-425, In German with English summary, p.425. 4 refs.
Icebreakers, Ice breaking, Ice conditions, Ice strength, Tests, Velocity, Models, Snow cover effect.

42-1095
Behavior of the propulsion system of the research vessel *Polarstern* during navigation in ice. [Verhalten der Maschinenanlage von FS "Polarstern" bei Eisfahrt],
Sasse, I., *Schiffbautechnische Gesellschaft, Hamburg. Jahrbuch,* 1985, Vol.79, p.427-436, In German with English summary, p.436. 2 refs.
Ice navigation, Icebreakers, Ice floes, Thermal stresses, Ice loads, Vibration.

42-1096
Study of a glacier simulator. [Etude d'un simulateur de glacier],
Meyssonnier, J., *France. Centre national de la recherche scientifique. Laboratoire de glaciologie. Publication,* 1974, No.183, 150p., In French. Ph.D. thesis. 21 refs.
Glacier flow, Simulation, Models, Laboratory techniques, Basal sliding, Measurement.

42-1097
Biological production at the ice-water ergocline.
Demers, S., et al, *Elsevier oceanography series,* 1986, Vol.42, Marine interfaces ecohydrodynamics, edited by J.C.J. Nihoul, p.31-54, Refs. p.50-54.
Legendre, L., Therriault, J.C., Ingram, R.G.
Ice water interface, Algae, Ice composition, Antarctica—McMurdo Sound.
The ice-water interface is the site of high microalgal productivity. These microalgae constitute an important part of the productivity of polar seas. The growth of ice microalgae during the spring and perhaps during the autumn extends the short growing season in the water column. Herbivores have been observed to actively feed on the ice microalgae. Sea-ice microalgae respond to variations in salinity (which controls biomass and taxonomic composition in coastal areas influenced by freshwater runoff), temperature (the survival of microalgae depends on their ability to develop a protection mechanism against freezing), light (the photosynthetic activity of ice microalgae is a function of both light intensity and quality) and nutrients (nutrient limitation has been demonstrated even when ambient nutrient concentrations were high). The biological production at this energetic interface is examined in the specific context of the ice-water ergocline. (Auth.)

42-1098
Arctic tanker: feasibility design report, Phase 1, Part 1, Vol.1.
Newport News Shipbuilding and Dry Dock Co., Newport News, Virginia, Aug. 1970, 8 sections + appends., Unpublished manuscript. Prepared for Humble Oil Refining Co.
Icebreakers, Tanker ships, Ice breaking, Design.

42-1099
1979/80 conical structure test program, AOGA project 113.
Wood, K.N., ESSO Resources Canada Limited, Research Dept., Aug. 1980, 99p. + appends., 4 refs.
Offshore structures, Ice conditions, Pressure ridges, Ice loads, Tests, Ice mechanics, Flexural strength, Ice elasticity.

42-1100
Alaskan North Slope geology.
Alaskan North Slope Geology Seminar, 2nd, Anchorage, AK, May 22-24, 1985, Bakersfield, CA, Society of Economic Paleontologists and Mineralogists, Pacific Section, Oct. 1, 1987, 874p. (2 vols.), Refs. passim. For selected papers see 42-1101 through 42-1103.
Tailleur, I.R.V., ed, Weimer, P., ed.
Permafrost thickness, Permafrost depth, Geology, Subsea permafrost, Meetings, Permafrost thermal properties, United States—Alaska—North Slope.

42-1101
Temperature and depth of permafrost on the Alaskan Arctic slope.
Lachenbruch, B.V., et al, Alaskan North Slope Geology Seminar, 2nd, Anchorage, AK, May 22-24, 1985. Proceedings, Bakersfield, CA, Society of Economic Paleontologists and Mineralogists, Pacific Section, Oct. 1, 1987, p.545-558, 19 refs.
Permafrost depth, Permafrost thermal properties, Permafrost thickness, Sediments, United States—Alaska—North Slope.

42-1102
Electromagnetic survey of permafrost thickness in northern Alaska in 1969 and 1970.
Keller, G.V., Alaskan North Slope Geology Seminar, 2nd, Anchorage, AK, May 22-24, 1985. Proceedings, Bakersfield, CA, Society of Economic Paleontologists and Mineralogists, Pacific Section, Oct. 1, 1987, p.559-563, 16 refs.
Permafrost thickness, Electromagnetic prospecting, Sounding, Permafrost depth, Freezing points, United States—Alaska—North Slope.

42-1103
Transient electromagnetic detection of subsea permafrost near Prudhoe Bay, Alaska.
Walker, G.G., et al, Alaskan North Slope Geology Seminar, 2nd, Anchorage, AK, May 22-24, 1985. Proceedings, Bakersfield, CA, Society of Economic Paleontologists and Mineralogists, Pacific Section, Oct. 1, 1987, p.565-569, 11 refs.
Kawasaki, K., Osterkamp, T.E.
Subsea permafrost, Electromagnetic prospecting, Permafrost depth, Permafrost thickness, Sounding, Sediments, Models, Active layer, United States—Alaska—North Slope.

42-1104
Present state of road maintenance machines and problems to be solved. [Doro hoshu kikai no genjo to kadai],
Watanabe, K., et al, *Road (Doro),* May 1985, No.531, p.26-29, In Japanese.
Hokari, M.
Road maintenance, Snow removal.
Snow removing machines for use on roads and sidewalks are described in section 3: rotary snow removing machines (blowers), graders, bulldozers, snow disposing trucks, and antifreeze chemical spreaders.

42-1105
Road maintenance in snowy Yamagata. [Yukiguni Yamagata no doro hozen],
Shimanuki, H., *Road (Doro),* May 1985, No.531, p.49-51, In Japanese.
Road maintenance, Winter maintenance, Snow removal, Tires, Water pipes, Wells, Trenching, Snow fences, Municipal engineering, Citizen cooperation, Japan—Yamagata Prefecture.

42-1106
Road snow removal and snow protection in Aomori Prefecture. [Aomori-ken ni okeru doro no josetsu/-bosetsu taisaku ni tsuite],
Sato, N., *Road (Doro),* Feb. 1986, No.540, p.41-48, In Japanese.
Road maintenance, Snow removal, Snow disposal, Sidewalks, Snow fences, Snowdrifts, Trenching, Japan—Aomori Prefecture.

42-1107
Snow and ice countermeasures on Tohoku Throughway: importance of securing transport. [Tohoku Jidoshado ni okeru seppyo taisaku],
Miyata, M., *Road (Doro),* Feb. 1986, No.540, p.49-53, In Japanese.
Snow removal, Road maintenance, Road icing, Chemical ice prevention, Transportation, Cold weather operation, Geomorphology, Economic development, Japan—Tohoku.

42-1108
Making Shinjo snowproof: street projects toward "snow utopia". [Shinjo-shi ni okeru yuki ni tsuyoi toshi zukuri],
Imai, T., *Road (Doro),* Feb. 1986, No.540, p.54-59, In Japanese.
Road maintenance, Municipal engineering, Sidewalks, Snow removal, Snow disposal, Trenching, Water pipes, Water supply, Urban planning, Japan—Shinjo.

42-1109
Summary report on heavy snowfall of 1985-86: countermeasures and future tasks. [Showa 61nen gosetsu no gaikyo to taisaku],
Yamanaka, Y., *Road (Doro),* May 1986, No.543, p.46-49, In Japanese.
Snowfall, Transportation, Damage, Cold weather operation, Snow removal, Government subsidies.

42-1110
New snow protection engineering handbook. [Shin bosetsu kogaku handobukku],
Japan Association for Mechanization of Construction, Tokyo, Moritake Shuppan, 1985, 512p., In Japanese. Includes bibliographies. 4th printing. First ed. 1977.
Snow physics, Snow mechanics, Avalanche engineering, Blowing snow, Snowdrifts, Snow removal, Trenching, Heat pipes, Chemical ice prevention, Snow.

42-1111
New road snow removal handbook. [Shin doro josetsu handobukku],
Japan Association for Mechanization of Construction, Tokyo, Nihon Kensetsu Kikaika Kyokai, 1981, 281p., In Japanese.
Snow removal, Ice prevention, Roads, Sidewalks, Heat pipes, Trenching, Municipal engineering, Winter, Snow, Ice.

42-1112
All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries. [Tezisy dokladov],
Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987, Apatity, 1987, 118p., In Russian. For selected summaries see 42-1113 through 42-1119. Refs. passim.
Matishov, G.G., ed.
Paleoecology, Climatic changes, Glacial deposits, Subsea permafrost, Paleoclimatology, Paleobotany, Meteorology, Ice conditions, Marine deposits, Ocean environments, Periglacial processes, Erosion, Meetings, Mathematical models, Computer applications, Arctic Ocean.

42-1113
Computerized simulation of ice conditions in the Barents Sea. [Modelirovanie na EVM oledeneniia Barentseva moria],
Adrov, N.M., et al, Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.5, In Russian.
Smoliar, I.V.
Sea ice distribution, Drift, Ocean currents, Water transport, Ice formation, Computerized simulation.

42-1114
Hydrochemical parameters of sea ice and the level of initial production. [Gidrokhimicheskie parametry morskikh l'dov i uroven' pervichnoĭ produktsii],
Bardan, S.I., Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.10-11, In Russian.
Photosynthesis, Marine deposits, Ice composition, Sedimentation, Marine biology, Ice formation, Seasonal variations.

42-1115
Cryolithologic indication of ecologic situation on the West Siberian shelf of the Arctic Ocean in Pleistocene. [Kriolitologicheskaia indikatsii ekologicheskoĭ obstanovki na Zapadno-Sibirskom shel'fe Severnogo Ledovitogo okeana v pleĭstotsene],
Bolikhovskiĭ, V.F., Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.15-17, In Russian.
Subsea permafrost, Permafrost structure, Ice salinity, Layers, Ice structure.

42-1116
Evidence of the possible presence of buried ice in shelves of northern seas. [Svidetel'stvo vozmozhnogo nakhozhdeniia iskopaemykh l'dov na shel'fe severnykh morei],
Gol'dfarb, IU.I., et al, Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.25, In Russian.
Ezhova, A.B.
Marine deposits, Ice salinity, Subsea permafrost, Permafrost origin.

42-1117
Role of ice formation and melting in the development of ecological conditions in seas and oceans. [Rol' obrazovaniia i taianiia l'da v formirovanii ekologicheskikh usloviĭ v moriakh i okeanakh],
Ivanov, A.V., Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.52-53, In Russian.
Sea water freezing, Ocean environments, Seasonal freeze thaw, Environmental impact.

42-1118
Ionic composition of water during melting of sea ice. [Ionnyĭ sostav vody pri taianii morskogo l'da],
Pavlova, L.G., Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.86-87, In Russian.
Sea water, Chemical composition, Water chemistry, Ions, Sea water freezing, Ice melting.

42-1119
Bioindication of ice conditions during sediment accumulation in the Okhotsk and Japan seas in Pleistocene. [Bioindikatsiia ledovykh obstanovok osadkonakopleniia v pleĭstotsene IAponskogo i Okhotskogo morei],
Pletnev, S.P., et al, Vsesoiuznaia konferentsiia "Problemy chetvertichnoĭ paleoekologii i paleogeografii severnykh morei", 2nd, Apatity, 1987. Tezisy dokladov (All-Union conference on Problems of Quaternary paleoecology and paleogeography of northern seas, 2nd, Apatity, 1987. Summaries) edited by G.G. Matishov, Apatity, 1987, p.91-92, In Russian.
Grebennikova, T.A.
Paleoecology, Sea ice distribution, Pack ice, Ecosystems, Ice formation, Ocean environments, Drift, Water temperature.

42-1120
Dust control in coal mines of Yakutia. [Bor'ba s pyl'iu na ugol'nykh razrezakh IAkutii],
Osodoev, M.T., Yakutsk, SO AN SSSR, 1987, 113p., In Russian with abridged English table of contents enclosed. 94 refs.
Mining, Coal, Continuous permafrost, Mine shafts, Dust control, Artificial snow, Equipment, Design, Tests.

42-1121
Water supply in the North. [Vodosnabzhenie na Severe],
Vdovin, IU.I., Leningrad, Strolizdat, 1987, 166p. In Russian with abridged English table of contents enclosed. 78 refs.
Water supply, Water treatment, Permafrost hydrology, Continuous permafrost, Taliks, Suprapermafrost ground water, Subpermafrost ground water, Water intakes, Ice (water storage), Snow water equivalent, Water storage.

42-1122
Installation of equipment for cluster drilling of wells. [Montazh oborudovaniia pri kustovom burenii skvazhin],
Voevoda, A.N., et al, Moscow, Nedra, 1987, 206p., In Russian with English table of contents enclosed. 30 refs.
Karapetian, K.V., Kolomatskiĭ, V.N.
Oil wells, Drilling, Swamps, Frozen rocks, Offshore drilling, Cold weather operation, Cold weather performance.

42-1123
Conference of young scientists and specialists, 15th, IUzhno-Sakhalinsk, 1987. Summaries of reports. [Konferentsiia molodykh uchenykh i spetsialistov, 15th, IUzhno-Sakhalinsk, 1987. Tezisy dokladov], Akademiia nauk SSSR. Dal'nevostochnyĭ nauchnyĭ tsentr. Institut morskoĭ geologii i geofiziki, IUzhno-Sakhalinsk, 1987, 69p., In Russian.
Patrikeev, V.N., ed.
Ice floes, Hydraulic structures, Pipelines, Pressure ridges, Drift, Ocean environments, Bottom sediment, Mathematical models, Erosion, Bottom ice, Underwater ice.

42-1124
Modeling sea-bottom erosion by drifting ice formations. [Modelirovanie erozii morskogo dna dreĭfuiushchimi ledovymi obrazovaniiami],
Plynin, V.V., Akademiia nauk SSSR. Dal'nevostochnyĭ nauchnyĭ tsentr. Institut morskoĭ geologii i geofiziki. Konferentsiia molodykh uchenykh i spetsialistov, 15th, IUzhno-Sakhalinsk, 1987. Tezisy dokladov (Academy of Sciences USSR. Far East Scientific Research Center. Institute of marine geology and geophysics. Conference of young scientists and specialists, 15th, IUzhno-Sakhalinsk, 1987. Summaries of reports) edited by V.N. Patrikeev, IUzhno-Sakhalinsk, 1987, p.59, In Russian.
Bottom ice, Underwater ice, Drift, Hydraulic structures, Pipelines, Bottom sediment, Erosion, Mathematical models.

42-1125
Determining ecological requirements for the safety of subsea pipelines where the bottom is subject to erosion by drifting ice formations. [Opredelenie ekologicheskikh trebovaniĭ k nadezhnosti morskikh truboprovodov v usloviiakh erozii dna dreĭfuiushchimi ledovymi obrazovaniiami],
Plynina, E.F., et al, Akademiia nauk SSSR. Dal'nevostochnyĭ nauchnyĭ tsentr. Institut morskoĭ geologii i geofiziki. Konferentsiia molodykh uchenykh i spetsialistov, 15th, IUzhno-Sakhalinsk, 1987. Tezisy dokladov (Academy of Sciences USSR. Far East Scientific Research Center. Institute of marine geology and geophysics. Conference of young scientists and specialists, 15th, IUzhno-Sakhalinsk, 1987. Summaries of reports) edited by V.N. Patrikeev, IUzhno-Sakhalinsk, 1987, p.60, In Russian.
Plynin, V.V.
Ecology, Pipelines, Bottom sediment, Erosion, Sea ice distribution, Drift, Pressure ridges, Ocean environments, Ice cover thickness, Analysis (mathematics).

42-1126
Organization of geographic information and thematic mapping. [Organizatsiia geograficheskoĭ informatsii i tematicheskaia kartografiia],
Koshkarev, A.V., ed, Vladivostok, 1987, 124p., In Russian. For selected papers see 42-1127 and 42-1128. Refs. passim.
Mapping, Monitors, Aerial surveys, Data processing, Spaceborne photography, Snow surveys, Alpine landscapes, Snow cover distribution, Taiga.

42-1127
Mutual enhancement of cartographic and aerial-satellite methods in environmental monitoring. [Vzaimodeĭstvie kartograficheskogo i aerokosmicheskogo metodov pri monitoringe okruzhaiushcheĭ sredy],
Berliant, A.M., et al, Organizatsiia geograficheskoĭ informatsii i tematicheskaia kartografiia (Organization of geographic information and thematic mapping) edited by A.V. Koshkarev and V.P. Karakin, Vladivostok, 1987, p.25-38, In Russian. 10 refs.
Novakovskiĭ, B.A.
Alpine glaciation, Monitors, Aerial surveys, Mapping, Spaceborne photography, Snow surveys, Alpine landscapes, Snow cover distribution, Charts.

42-1128
Isolinear mapping of natural resources of taiga. Experience and prospects. [Opyt i perspektivy izolinelnogo kartografirovaniia prirodnykh resursov taĭgi],
Cherviakov, V.A., Organizatsiia geograficheskoĭ informatsii i tematicheskaia kartografiia (Organization of geographic information and thematic mapping) edited by V.V. Koshkarev and V.P.Karakin, Vladivostok, 1987, p.91-96, In Russian. 17 refs.
Taiga, Data processing, Natural resources, Mapping, Baykal Amur railroad, Statistical analysis.

42-1129
Annual report 1986 and future plans.
National Research Council. Polar Research Board, Washington, D.C., National Academy Press, 1987, 60p.
Research projects, Polar regions.
This annual report describes the Polar Research Board, its origin and objectives, its work and plans, and its principal activities and accomplishments during calendar year 1986. An overview presents a concise summary of the various aspects of the Board's program and of its responsibilities as U.S. National Committee for the Scientific Committee on Antarctic Research (SCAR) of the International Council of Scientific Unions. This section serves as a guide to the more detailed information in the rest of the report. At the end of the report are lists of those who participated in the work of the board and its subgroups and of those who represented the United States in the activities of SCAR, based on membership as of Dec. 31, 1986. There are also lists of publications by the Board, reports issued during the past year, and those in preparation. (Auth.)

42-1130
Master index for the carbon dioxide research State-of-the Art Report series.
Farrell, M.P., ed, *U.S. Department of Energy. Report*, Mar. 1987, DOE/ER-3016, 253p., Refs. p.77-94.
Climatic changes, Carbon dioxide, Ice melting, Impurities, Glacier melting.
The following is included in the report: executive summaries of 4 state of the art reports and 2 supporting documents dealing with atmospheric carbon dioxide and the global carbon cycle, projecting and detecting the climatic effects of increasing carbon dioxide; the effects on vegetation, characterization of information requirements for studies of CO2 effects, and glaciers, ice sheets, and sea level effect of CO2-induced climatic change, respectively; a glossary of terms; tables; a glossary of acronyms; indexes of common and scientific names; a citation index; and a subject index.

42-1131
Marine ice transgression hypothesis.
Hughes, T.J., *Geografiska annaler. Series A Physical geography*, 1987, 69A(2), p.237-250, 29 refs.
Ice mechanics, Sea ice, Ice age theory, Ice sheets, Fast ice, Ice shelves.
The sequence of transitions from sea ice to fast ice to ice shelves to marine ice domes to an ice sheet is examined, with special attention to how marine ice transgression may have produced the Laurentide Ice Sheet. Figures comparing the glaciation of North America, Eurasia, and Antarctica according to high-land origin, windward growth, the instantaneous glacierization, and the marine ice transgression hypotheses for forming ice sheets are shown and discussed. (Auth. mod.)

42-1132
Ice layers and superimposition of ice on the summit and slope of Vestfonna, Svalbard.
Palosuo, E., *Geografiska annaler. Series A Physical geography*, 1987, 69A(2), p.289-296, 14 refs.
Ice mechanics, Ice formation, Ice cover thickness, Snow cover, Ablation, Rheology, Ice crystal structure, Ice leases, Norway—Svalbard.

42-1133
Nature and importance of thermokarst processes, Sand Hills moraine, Banks Island, Canada.
Lewkowicz, A.G., *Geografiska annaler. Series A Physical geography*, 1987, 69A(2), p.321-327, 20 refs.
Permafrost thermal properties, Karst, Moraines, Ground ice, Ice melting, Topographic features, Canada—Northwest Territories—Banks Island.

42-1134
Physical factors controlling the formation of patterned ground on Haleakala, Maui.
Noguchi, Y., et al, *Geografiska annaler. Series A Physical geography*, 1987, 69A(2), p.329-342, 31 refs.
Tabuchi, H., Hasegawa, H.
Patterned ground, Freeze thaw cycles, Periglacial processes, Soil water, Air temperature, Mountains, Fog, United States—Hawaii—Maui Island.

42-1135
Glaciological research program in east Queen Maud Land, East Antarctica, Part 6, Advance Camp, 1985.
Kikuchi, T., et al, *Japanese Antarctic Research Expedition. JARE data reports*, Sep. 1987, No.129, 104p., 4 refs.
Ageta, Y.
Snow heat flux, Snow accumulation, Meteorology, Antarctica—Queen Maud Land, Antarctica—Showa Station.
The inland traverse party of JARE-26 reached the Advance Camp (AC), established as part of the East Queen Maud Land Glaciological Project, on Feb. 7, 1985, where glaciological and meteorological observations were carried out until the end of the month. The party left AC on Mar. 1 for wintering over at Mizuho and Showa stations, returning to AC on Oct. 14, 1985. Ice cores were drilled to a depth of 200 m. The report provides the following glaciological and meteorological data obtained at AC: the surface and the upper atmosphere meteorological data, the net radiative heat flux, and the net accumulation of snow.

42-1136
Climatic atlas of icing potential over North America.
Thorson, P.R., *U.S. Air Force. Environmental Technical Applications Center. Report*, Jan. 1986, USAFETAC/DS-86/001, 126p., ADA-174 260, 6 refs.
Aircraft icing, Climatology, Unfrozen water content, Meteorological charts, Temperature effects, Remote sensing, Maps, Computer applications.

42-1137
Arctic survival book: safety on land, sea and ice.
Owingayak, D., Eskimo Point, Northwest Territories, Inuit Cultural Institute, [1986], 107p., In English, Inuit and Greenlandic. Includes dictionary p.69-107.
CaOORDN-E99.E7 094
Cold weather survival, Ice conditions, Weather, Snow (construction material), Ice (construction material).

42-1138
Physical model of gradient zone erosion in thermokaline systems.
Hull, J.R., et al, *International journal of heat and mass transfer*, June 1987, 30(6), p.1027-1036, With French, German and Russian summaries. 29 refs.
Mehta, J.M.
Erosion, Heat transfer, Mass transfer, Temperature variations, Mathematical models, Convection, Lake water, Salinity.

42-1139
Heat capacity and glass transition of pure and doped cubic ices.
Yamamuro, O., et al, *Journal of physics and chemistry of solids*, 1987, 48(10), p.935-942, 39 refs.
Oguni, M., Matsuo, T., Suga, H.
Cubic ice, Doped ice, Heat capacity, Thermodynamics, Temperature measurement, Ice temperature.

42-1140
Meteorological observations at Syowa Station in 1982 by the 23rd Japanese Antarctic Research Expedition.
Yoshihira, T., et al, *Antarctic record*, July 1987, 31(2), p.131-154, In Japanese with English summary. 8 refs.
Shudo, Y., Kajihara, R., Sasaki, M.
Snowstorms, Snow accumulation, Meteorological data, Antarctica—Showa Station.
This paper describes the results of meteorological observations from Feb. 1, 1982 to Jan. 31, 1983, at Showa Station. The observations and the statistics of surface and aerological data were automatically processed until Sep. 1, 1982 after which the upper air observations were carried out manually. Remarkable characteristics are as follows: the ten-day mean temperature of late Aug. and early Sep. was lower than the normal values over 5 C. A minimum temperature -45.3 C, recorded on Sep. 4, was the lowest value since the observation had begun at Showa Station. Forty-two blizzards occurred of several days duration. The snow depth measured on Oct. 30 was 105.6 cm, which was deeper than the normal values throughout the year. (Auth.)

42-1141
Oceanographic and geophysical applications of satellite altimetry.
Douglas, B.C., et al, *Reviews of geophysics*, June 1987, 25(5), p.875-880, Refs. p.878-880.
McAdoo, D.C., Cheney, R.E.
Bottom topography, Spacecraft, Geophysical surveys, Sea level.
One of the most difficult aspects of the use of altimeter data is finding the correct track point over land and ice surfaces. Waveform data must be carefully analyzed to solve this problem. This has been accomplished to a high degree of precision and applied successfully to the Greenland and antarctic ice fields. Important new insights into the nature of satellite ephemeris error and its influence on altimetrically derived sea surface topography are discussed. (Auth. mod.)

42-1142
Vapour pressure of amorphous H2O ice and its astrophysical implications.
Kouchi, A., *Nature*, Dec. 10, 1987, 330(6148), p.550-552, 16 refs.
Ice physics, Cubic ice, Vapor pressure, Ice temperature, Extraterrestrial ice.

42-1143
Interstellar shock waves and Be-10 from ice cores.
Sonett, C.P., et al, *Nature*, Dec. 3, 1987, 330(6147), p.458-460, 22 refs.
Morfill, G.E., Jokipii, J.R.
Ice cores, Ice composition, Isotope analysis, Antarctica—Vostok Station, Antarctica—Wilkes Land.
The anomalously high concentrations of Be-10 in antarctic ice cores, uncorrelated with delta O-18, are consistent with an increase in the atmospheric cosmic ray (CR) flux from CR acceleration in propagating interstellar shock waves, which envelop the heliosphere and whose source may be ancient supernovas. This mechanism is an alternative to the model where decreases in geomagnetic field intensity, associated with geomagnetic reversals, periodically enhance the CR flux at the top of the atmosphere. That CR variations attributable to interstellar events such as supernova shock waves have so far not been observed in the CR record is a long-standing issue. If the interpretation of the Be-10 spikes is correct, it marks the first such observation. The possibility that 'direct' observation of the interstellar medium can be made using the Be-10 record would be an important adjunct to the study of cosmic rays in the interstellar medium. (Auth.)

42-1144
Suppression of earthquakes by large continental ice sheets.
Johnston, A.C., *Nature*, Dec. 3, 1987, 330(6147), p.467-469, 32 refs.
Ice sheets, Ice cover effect, Earthquakes.
The interior regions of Antarctica and Greenland are aseismic: no earthquake larger than body-wave magnitude 4.5-5.0 is known for either, except along coastal zones or continental shelves. An explanation is advanced for this lack of seismic activity in terms of pressure effects produced by the continental ice sheets that mantle both continents. (Auth.)

42-1145
Measurements of methanesulphonic acid in antarctic ice.
Saigne, C., et al, *Nature*, Nov. 19, 1987, 330(5145), p.240-242, 19 refs.
Legrand, M.
Ice cores, Ice composition.
Dimethylsulphide (DMS), mainly produced by marine biogenic activity, plays an important role in the atmospheric sulphur budget. Methanesulphonic acid (MSA) and sulphur dioxide (SO2, hereafter converted into non-sea-salt (n.s.s.) sulphate) are the main oxidation products of DMS. As opposed to n.s.s. sulphate, which has other sources (for example, volcanoes, terrestrial sulphate), MSA represents an unequivocal indicator of marine biogenic activity. MSA has previously been investigated in marine aerosols at low and mid-latitudes as well as in precipitations and polar ice; here are presented 54 MSA measurements made in antarctic ice. Coastal area precipitations exhibit unexpectedly high (up to 100%) MSA/n.s.s. weight ratios *(r)* compared with values commonly observed in mid-latitude marine atmospheres. At higher elevations (2,000 m) the *r* values suggest a marine biogenic input of more global significance. The MSA concentrations (several p.p.b.) confirm that the n.s.s. sulphate in antarctic ice is mainly derived from marine biogenic activity. During the last ice age, MSA contents were 2-5 times higher than today. This study of high-latitude precipitations demonstrates the feasibility of reconstructing past marine biogenic activity of global significance. (Auth.)

42-1146
Scattering and absorption of visible light in sea ice from transmission and backscattering measurements.
Buckley, R.G., et al, *New Zealand. Department of Scientific and Industrial Research. Physics and Engineering Laboratory. Report*, July 1986, No.951, 40p., 25 refs.
Trodahl, H.J., Langhorne, P.J.
Ice optics, Light transmission, Sea ice, Light scattering, Backscattering, Radiation absorption, Anisotropy, Ice water interface, Algae, Measuring instruments, Antarctica—McMurdo Sound.
A new experimental technique, developed and tested in McMurdo Sound, Antarctica for the *in situ* measurement of the diffusive transport of light through sea ice, is described. A weakly divergent monochromatic light source is placed on the surface of the ice and the emergent radiation field is measured at both the top and bottom surfaces. The magnitudes of the emergent radiance and their dependence on distance from the source have given the first simple and direct measurement of the light scattering length, inhomogeneity and anisotropy in this very complex material. The scattering length is 0.06 m and isotropic near the top but changing in the bulk to about 0.1 m for horizontal paths and 0.2 m for vertical paths. It has also been possible to separate out the effects of a strongly scattering top surface layer and of an absorbing layer near the ice-water interface that we have associated with algae. (Auth.)

42-1147
Seasonal snowcovers: physics, chemistry, hydrology.
NATO Advanced Study Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986, NATO ASI series, Series C: Mathematical and Physical sciences; Vol.211, Dordrecht, Holland, D. Reidel Publishing Co., 1987, 746p., Refs. passim. For individual papers see 42-1148 through 42-1178.
Jones, H.G., ed, Orville-Thomas, W.J., ed.
Snow physics, Snow composition, Snow hydrology, Meetings, Seasonal variations, Metamorphism (snow), Ice composition, Isotope analysis, Chemical analysis, Snow impurities.

42-1148
Snow metamorphism and classification.
Colbeck, S.C., MP 2265, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.1-35, Refs. p.29-35.
Metamorphism (snow), Ice crystal growth, Water vapor, Water flow, Isotopes, Classifications.
The flow of water vapor in dry snow and crystal growth from the vapor are reviewed to provide a basis for understanding the metamorphism of dry snow. The movement of isotopes with the vapor is also described. The growth of grains in water-saturated snow is described in some detail because it is the best known example of metamorphism. Grain clusters and melt-freeze grains dominate wet snow at low liquid contents. After the principles and observations are all described, a snow classification scheme is proposed.

42-1149
Water vapor transport in snow a 2-D simulation of temperature gradient metamorphism.
Christon, M., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.37-62, 23 refs.
Burns, P., Thompson, E., Sommerfeld, R.
Snow physics, Ice crystals, Water vapor, Heat transfer, Mass transfer, Vapor diffusion, Temperature gradients, Metamorphism (snow).

42-1150
Measurement of snow grain properties.
Davis, R.E., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.63-74, 30 refs.
Dozier, J., Perla, R.
Snow cover structure, Microstructure, Ice crystal structure, Grain size, Snow density, Seasonal variations, Stereoscopy.

42-1151
Experimental study on thermal convection and grains picture analysis.
Brun, E., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.75-94, 13 refs.
Touvier, F., Brunot, G.
Snow thermal properties, Heat flux, Snow physics, Thermal conductivity, Convection, Atmospheric circulation, Experimentation, Temperature gradients, Porosity, Mathematical models.

42-1152
Fractionation of natural isotopes during temperature gradient metamorphism of snow.
Sommerfeld, R.A., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.95-105, 13 refs.
Friedman, I., Nilles, M.
Metamorphism (snow), Isotopes, Mass transfer, Vapor diffusion, Water vapor, Temperature gradients, Analysis (mathematics).

42-1153
Avalanche forecasting and snow physics.
Lafeuille, J., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.107-117, 12 refs.
Avalanche forecasting, Snow physics, Avalanche formation, Snow crystals, Snow cover stability, Mountains, Computer applications.

42-1154
Wind transport of seasonal snowcovers.
Pomeroy, J.W., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.119-140, Refs. p.138-140.
Male, D.H.
Blowing snow, Snow mechanics, Wind velocity, Mass transfer, Models, Analysis (mathematics).

42-1155
Note on certain diurnal variations in the albedo of snow and ice.
Bolsenga, S.J., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.141-150, 18 refs.
Snow optics, Ice optics, Albedo, Reflectivity, Radiation balance, Diurnal variations, Mathematical models.

42-1156
Modelling of snowmelt rates in a deciduous forest.
Price, A.G., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.151-165, 8 refs.
Snowmelt, Forest canopy, Heat balance, Mathematical models, Temperature effects, Snow hydrology.

42-1157
Prediction of snow density and temperature changes within layers of the snowpack using a point energy and mass balance model.
Stein, J., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.167-178, Refs. p.176-178.
Snow density, Mass balance, Snow temperature, Heat balance, Mathematical models, Snow cover, Snow depth.

42-1158
Modelling of water flow through snowpacks.
Morris, E.M., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.179-208, Refs. p.204-208.
Snow cover, Water flow, Ice water interface, Penetration, Snow physics, Mathematical models.

42-1159
Direct scavenging and induced transport of atmospheric aerosol by falling snow and ice crystals.
Podzimek, J., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.209-224, Refs. p.222-224.
Aerosols, Ice crystals, Snowflakes, Snowfall, Adhesion, Dynamic properties, Ions, Ice fog.

42-1160
Experimental protocol for the chemical analysis of snow, firn and ice cores.
Legrand, M.R., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.225-254, 15 refs.
Delmas, R.J.
Snow composition, Ice composition, Firn, Chemical analysis, Ions, Tests, Sampling, Impurities, Measuring instruments, Coring.

42-1161
Review of snowpack chemistry studies.
DeWalle, D.R., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.255-268, Refs. p.265-268.
Snow composition, Chemical analysis, Snow cover, Air masses, Pollution, Snow melting, Snow impurities, Rain.

42-1162
Chemical transformations in a snow cover at Weissfluhjoch, Switzerland, situated 2500 m.a.s.l.
Sigg, A., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.269-279, 13 refs.
Neftel, A., Zürcher, F.
Snow composition, Chemical analysis, Snow impurities, Snow deformation, Snow cover, Mountains, Ions, Temperature distribution, Snow temperature.

42-1163
Chemical evolution of a seasonal snowcover at mid- and high altitudes.
Page, Y., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.281-288, 3 refs.
Snow composition, Chemical analysis, Snow cover, Ions, Mountains, Climatic factors, Snow depth, Snow temperature.

42-1164
Physical and chemical factors controlling gaseous deposition of SO2 to snow.
Bales, R.C., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.289-297, 9 refs.
Valdez, M.P., Dawson, G.A., Stanley, D.A.
Snow composition, Chemical analysis, Gas inclusions, Diffusion, Unfrozen water content, Snow water content, Penetration, Snow cover.

42-1165
Contribution of dry deposition to snowpack acidity in Michigan.
Cadle, S.H., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.299-320, 16 refs.
Dasch, J.M.
Snow composition, Chemical properties, Snow impurities, Ions, Snow cover, Snow melting, Particles, Air pollution.

42-1166
Wind as a factor in the direct measurement of the dry deposition of acid pollutants to snowcovers.
Delmas, V., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.321-335, 24 refs.
Jones, H.G.
Air pollution, Snow composition, Snow impurities, Wind factors, Snow cover, Chemical analysis, Particles, Temperature effects, Precipitation (meteorology).

42-1167
Removal of soluble ions from melting snowpacks.
Davies, T.D., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.337-392, Refs. p.386-392.
Meltwater, Ions, Chemical composition, Ice composition, Snow composition, Soil water, Streams, Distribution, Snow melting, Snow depth.

42-1168
Aspects of the chemistry of ice, notably snow, on lakes.
Adams, W.P., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.393-466, Refs. p.462-466.
Allan, C.
Ice composition, Snow composition, Chemical analysis, Lakes, Rivers, Sea water, Ice cover, Snow cover, Snow ice interface, Wind factors, Slush, Colored ice.

42-1169
Methodology for investigation of snowmelt hydrology and chemistry within an undisturbed Canadian shield watershed.
English, M.C., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.467-499, 19 refs.
Snow hydrology, Snow composition, Chemical analysis, Snowmelt, Runoff, Watersheds, Meteorological factors, Snow cover, Ecosystems.

42-1170
Short term changes in the fluxes of water and of dissolved solutes during snow-melt.
Barry, P.J., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.501-530, 8 refs.
Price, A.G.
Meltwater, Snowmelt, Chemical analysis, Water flow, Solutions, Runoff.

42-1171
Chemical dynamics of snowcover and snowmelt in a boreal forest.
Jones, H.G., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.531-574, Refs. p.570-574.
Snow composition, Meltwater, Chemical analysis, Snow physics, Physical properties, Snowmelt, Forest canopy, Snow cover, Models.

42-1172
Changes in streamwater chemistry during snowmelt.
Tranter, M., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.575-597, Refs. p.592-597.
Meltwater, Chemical analysis, Water chemistry, Snowmelt, Streams, Ions, Solutions, Rain.

42-1173
Snowmelt runoff in the lake Laflamme experimental watershed, Quebec: methodology and preliminary results.
Prévost, M., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.599-610, Refs. p.607-610.
Barry, R., Stein, J., Plamondon, A.P.
Runoff, Snowmelt, Lake water, Watersheds, Models, Heat balance, Mass balance, Canada—Quebec—Laflamme Lake.

42-1174
Observations of snowmelt runoff pathways on a slope in a boreal forest environment, Lac Laflamme, Quebec.
Roberge, J., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.611-624, 15 refs.
Plamondon, A.P.
Runoff, Snowmelt, Forest canopy, Slopes, Topographic features, Ground water, Meltwater, Rain.

42-1175
Comparison of chemical and isotopic hydrograph separation.
Hooper, R.P., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.625-642, 17 refs.
Shoemaker, C.A.
Snowmelt, Snow composition, Water chemistry, Isotope analysis, Chemical analysis, Watersheds, Meltwater, Hydrography.

42-1176
Isotopic and geochemical study of seasonal snowmelt runoff in the Apex River watershed.
Obradovic, M.M., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.643-659, Refs. p.657-659.
Sklash, M.G.
Runoff, Snowmelt, Isotope analysis, Geochemistry, Permafrost beneath rivers, Watersheds, Water chemistry, Hydrography.

42-1177
Snow chemistry with particular reference for the chemical composition of snow in Scandinavia.
Gjessing, E., et al, NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.661-672, 2 refs.
Johannessen, M.
Snow composition, Chemical analysis, Snow impurities, Snowmelt, Air pollution, Environmental impact, Meltwater.

42-1178
Snowcover and snowmelt processes studied by means of environmental isotopes.
Stichler, W., NATO Advanced Institute on Seasonal Snowcovers: Physics, Chemistry, Hydrology, Les Arcs, France, July 13-25, 1986. Proceedings. Edited by H.G. Jones and W.J. Orville-Thomas. Seasonal snowcovers: physics, chemistry, hydrology, Dordrecht, Holland, D. Reidel Publishing Co., 1987, p.673-726, Refs. p.722-726.
Snow hydrology, Snowmelt, Isotope analysis, Glacier melting, Runoff, Snow cover, Isotopic labeling, Meltwater, Ice melting, Seasonal variations, Rain.

42-1179
Indirect study of air pollution by neutron activation analysis of snow.
Zikovsky, L., et al, *Journal of radioanalytical and nuclear chemistry. Articles,* Aug. 1987, 114(1), p.147-153, 8 refs.
Badillo, M.
Snow impurities, Air pollution, Neutron activation analysis.

42-1180
Growth of ice dendrites under mixed convection conditions.
Kind, M., et al, *Chemical engineering communications,* 1987, 55(1-6), p.295-312, 20 refs.
Gill, W.N., Ananth, R.
Dendritic ice, Liquid solid interfaces, Phase transformations, Ice formation, Convection, Supercooling.

42-1181
Very small glacier on Mt. Chokai, Japan, 1972-1981.
Tsuchiya, I., *Geographical review of Japan,* 1984, 57-B(2), p.142-153, With Japanese summary. 13 refs.
Glacier surveys, Snow cover distribution, Firn, Glacier ice, Classifications, Japan—Chokai Mountain.

42-1182
Proceedings of the NIPR Symposium on Polar Meteorology and Glaciology. No.1.
Kawaguchi, S., ed, Tokyo, National Institute of Polar Research, 1987, 161p., For individual papers see 42-1183 through 42-1187 or B-36605, F-36603, F-36604, F-36606, H-36598, I-36591 through I-36597 and I-36599 through I-36602.
Watanabe, O., ed, NIPR Symposium on Polar Meteorology and Glaciology.
Meetings, Atmospheric composition, Weather stations, Ice cores.
The 17 papers and 17 abstracts in this volume provide a representative sample of the topical range covered by participants in the 9th NIPR Symposium held Dec. 11-12, 1986. Ozone depletion and atmospheric chemistry are addressed in many of the papers; results of glaciological work appear here in mostly abstract form. The full symposium program list and author index close the volume.

42-1183
Climatic jump in the polar region (I).
Yamamoto, R., et al, NIPR Symposium on Polar Meteorology and Glaciology, 9th, Vol.1 edited by T. Matsuda, S. Kawaguchi, and O. Watanabe, Tokyo, National Institute of Polar Research, 1987, p.91-102, 11 refs.
Iwashima, T., Hoshiai, M.
Climatic changes, Atmospheric pressure.

42-1184
Evaporation form of ice crystals in subsaturated air and their evaporation mechanism.
Gonda, T., et al, NIPR Symposium on Polar Meteorology and Glaciology, 9th, Vol.1 edited by T. Matsuda, S. Kawaguchi, and O. Watanabe, Tokyo, National Institute of Polar Research, 1987, p.113-121, 14 refs.
Sei, T.
Ice crystal structure, Evaporation, Antarctica—Mizuho Station.
The evaporation form and the evaporation mechaniam of dendritic ice crystals grown in air of 100,000 Pa and at water saturation and polyhedral ice crystals grown in air of 40 Pa and at relatively low supersaturation are studied. In the case of dendritic ice crystals, the evaporation preferentially occurs in the convex parts of the crystal surfaces and in minute secondary branches. On the other hand, in the case of polyhedral ice crystals, the evaporation preferentially occurs in the parts where screw dislocations or stacking faults emerge. On the basis of these experimental results, the formation mechanism of single bullets observed at Mizuho Station is inferred. (Auth.)

42-1185
Orientation of the 700-m Mizuho core and its strain history.
Fujita, S., et al, NIPR Symposium on Polar Meteorology and Glaciology, 9th, Vol.1 edited by T. Matsuda, S. Kawaguchi, and O. Watanabe, Tokyo, National Institute of Polar Research, 1987, p.122-131, 10 refs.
Nakawo, M., Mae, S.
Ice cores, Ice mechanics, Strains, Tensile properties, Antarctica—Mizuho Station.
Structural analyses of the core revealed that the ice fabric pattern as well as the shape of individual ice grains and air bubbles exhibited strong anisotropies. They were correlated with the stress conditions of the ice sheet around the station. This became possible by an estimation of the geographical orientation of the core through measurements of the natural remanent magnetization formed accidentally. It was found that ice grains and air bubbles were elongated in the direction of flow, which was identical with the direction of the tensile strain. Also, c-axes of the ice grains tended to orient perpendicular to the tensile axis, forming a vertical great girdle pattern, which is considered to have resulted from the gradual rotation of the ice grains toward a plane normal to the tensile axis. The rotation of the grains was calculated with respect to the total strain, simulating a formation of the great girdle fabric pattern. By comparing the simulated fabric pattern with the measured pattern of the Mizuho core, the accumulated strain in the core ice was estimated at various depths. The total strain the core ice has experienced increased almost linearly with depth at a rate of about 20% per 100 m. (Auth.)

42-1186
Preliminary report on the contamination control for chemical analyses of antarctic ice samples.
Kanamori, S., et al, NIPR Symposium on Polar Meteorology and Glaciology, 9th, Vol.1 edited by T. Matsuda, S. Kawaguchi, and O. Watanabe, Tokyo, National Institute of Polar Research, 1987, p.132-139, 2 refs.
Ice cores, Ice composition, Laboratory techniques.
A possible penetration of contamination from the surface toward the inner part of cored ice and firn block samples was investigated for proper chemical analysis of Cl, SO4, NO3, NH4, Na, K, Mg, Al, Fe, Ni, Cu, Zn and other elements. Generally, the contamination of the ice core sample remains within 10 mm under the surface. However, for the elements with intense contamination, a high concentration level in the surface layer tends to affect the level in the inner part. For the firn block sample, though the contamination by Cl, SO4 and NO3 remains within 20 mm of depth from the surface, NH4, Na, K, Cu and Zn seem to pass through the surface layer but remain within 40 mm. A thermal knife was constructed, for use in the laboratory, of nichrome wire of 1 mm diameter covered with a platinum pipe, tested for cutting cored ice samples and was found satisfactory without significant contamination of the elements listed above. The use of a stainless steel hand saw was also found practical for firn block samples. (Auth.)

42-1187
Acquisition of natural remanent magnetization in snow and ice containing rock dust.
Saki, H., et al, NIPR Symposium on Polar Meteorology and Glaciology, 9th, Vol.1 edited by T. Matsuda, S. Kawaguchi, and O. Watanabe, Tokyo, National Institute of Polar Research, 1987, p.140-145, 3 refs.
Funaki, M.
Wet snow, Rock magnetism, Impurities.
Paleomagnetic study of the dirt-ice collected in the Allan Hills showed stable remanent magnetization in the dirt-ice. Experiments were performed to make clear the magnetization mechanisms of the dirt-snow and dirt-ice. Two types of artificial samples were prepared for this purpose. One was dirt-ice frozen from wet snow and the other was dry snow containing rock dust. The former samples acquired the stable remanent magnetization parallel to the geomagnetic field. This natural remanent magnetization (NRM) was acquired immediately during the freezing process from wet snow. The latter samples, preserved under low temperature conditions of both -10 and -20 C, acquired gradually the NRM in the direction of the geomagnetic field. The NRM's moment in the latter samples was not saturated during the 22-day preservation in low temperature condition. The acquisition of NRM advanced more effectively at -10 than -20 C. (Auth.)

42-1188
Modelling the interaction between pressure ridges and conical structures (assessment of the effects of ridge length, ice cover depth and angle of encounter). Final report 193-C.
Edwards, R.Y., et al, Montreal, Arctec Canada Ltd., Feb. 25, 1977, 2 vols., 4 refs. Vol.2 consists of 2 appendices.
Teh, D., Abdelnour, R.
Pressure ridges, Offshore structures, Ice loads, Ice solid interface, Ice models, Ice cover thickness, Tests, Analysis (mathematics), Equipment.

42-1189
Laboratory methods for determination of the water susceptibility of bituminous pavements.
Isacsson, U., et al, *Sweden. Statens väg- och trafikinstitut. Rapport,* 1987, No.324A, 43p., 16 refs.
Jörgensen, T.
Bitumens, Freeze thaw cycles, Pavements, Water, Damage, Tests, Aggregates, Adhesion, Strength.

42-1190
Observations on ice cover and streamflow in the Yukon River near Whitehorse during 1984/85.
Alford, M.E., et al, *National Hydrology Research Institute, Saskatoon, Saskatchewan. NHRI paper,* 1987, No.34, Inland Waters Lands Directorate, IWD scientific series No.155, 24p., With French summary. 8 refs.
Carmack, E.C.
River ice, Ice conditions, Stream flow, Lake ice, Ice conditions, Hydrology, Ice mechanics, Velocity, River basins, Climatic factors, Canada—Yukon River.

42-1191
Evaluation of portable combination breaker/driver/-drills for use in permafrost environments.
Egginton, P.A., et al, *Canada. Geological Survey. Open file,* 1987, No.1566, 6p., 1 ref.
Nixon, F.M.
Permafrost samplers, Drills, Pits (excavations), Equipment, Frozen ground.

42-1192
Development of an analytical model of the hydrodynamic added mass of a ship ramming ice.
Ghoneim, G.A., et al, *Transport Canada. Report,* May 5, 1987, TP 8393E, 38p.
Murray, M.A.
Ice breaking, Ice navigation, Icebreakers, Ice solid interface, Mathematical models, Tests, Hydrodynamics, Ice cover thickness, Ice strength.

42-1193
Design, development, upgrading and testing of the existing marine radar image display system for an ice navigation workstation.
McAvoy, G., et al, *Transport Canada. Report,* Oct. 1987, TP8549E, 102p. + append., With French summary. 8 refs.
Ice navigation, Airborne radar, Ice conditions, Ships, Design, Ice detection, Tests.

42-1194
Technology and costs of wastewater application to forest systems.
Crites, R.W., et al, MP 2266, Institute of Forest Resources, Contribution No.56, Forest Land Applications Symposium, Seattle, WA, June 25-28, 1985. Proceedings. Edited by D.W. Cole, C.L. Henry and W.L. Nutter. Forest alternative for treatment and utilization of municipal and industrial wastes, Seattle, WA, University of Washington Press, 1986, p.349-355, 14 refs.
Reed, S.C.
Waste treatment, Forest land, Water treatment, Land reclamation, Irrigation, Cost analysis, Maintenance.
Land treatment of municipal wastewater on forest land has been practiced experimentally for over twenty years and on a full-scale basis for over ten. The technology of land application consists of sprinkler irrigation using solid-set (fixed) sprinklers. Most sprinkler systems have been installed in existing forests using either buried or aboveground laterals. Design guidance for sprinkler spacing and operating pressures for solid-set systems in forests is presented. Costs of installed forest land application systems are also given. Costs and design factors are reviewed for systems at Snoqualmie Pass, Washington; Wolfeboro, New Hampshire; Lake of the Pines, California; Clayton County, Georgia; and State College, Pennsylvania. Operation and maintenance costs are provided for systems at Clayton County, Georgia; West Dover, Vermont; and Kennett Square, Pennsylvania. Reduction of the cost of future systems can be accomplished by minimizing the amount of effluent storage provided. Most forest systems can operate with thirty days storage or less. New technology and new plantations can allow reductions in the cost of wastewater application. Potential revenue from tree harvest can also reduce overall costs.

42-1195
Forest land treatment with municipal wastewater in New England.
Reed, S.C., et al, MP 2280, Institute of Forest Resources, contribution No.56, Forest Land Applications Symposium, Seattle, WA, June 25-28, 1985. Proceedings. Edited by D.W. Cole, C.L. Henry and W.L. Nutter. Forest alternative for treatment and utilization of municipal and industrial wastes, Seattle, WA, University of Washington Press, 1986, p.420-430, 12 refs.
Crites, R.W.
Waste treatment, Water treatment, Forest land, Land reclamation, Design, Water pollution, Countermeasures.

An overview of several case studies of forest land treatment with municipal wastewater in New England is presented. One of the earliest land treatment systems in this area in modern times was installed in 1971 by the state of New Hampshire at Sunapee State Park, in a mature forest of mixed hardwoods and conifers. The system is in excellent condition, and continued operation is planned for the foreseeable future. Municipal forest land treatment systems are also operating successfully at West Dover, Vermont; Wolfeboro, New Hampshire; and Greenville, Maine. Design and operating information is provided for all 4 systems. For West Dover the energy consumption is evaluated and the treatment performance is documented. West Dover operates throughout most winters with minimal storage. The improvements in water quality at several of these systems are also discussed, and a method for estimating phosphorus removal is described.

42-1196
Expectations for the strengthening of general snow countermeasures. [Sogoteki setsugai taisaku kyoka eno kitai],
Masuda, Y., *Road (Doro)*, June 1984, No.520, p.60-65, In Japanese.
Snow depth, Winter maintenance, Snow removal, Roads, Snowfall, Transportation, Cold weather operation, Japan—Niigata Prefecture.

42-1197
Coping with the heavy snowfall of 1984. [Showa 59nen gosetsu tono tatakai],
Doi, Y., *Road (Doro)*, June 1984, No.520, p.66-72, In Japanese.
Snow depth, Winter maintenance, Damage, Snow removal, Roads, Snowfall, Transportation, Cold weather operation, Japan—Tottori Prefecture.

42-1198
Construction machinery. [Kensetsu kikai],
Watanabe, K., *Road (Doro)*, Apr. 1984, No.518, p.35-36, In Japanese.
Cost analysis, Construction equipment, Snow removal, Machinery, Maintenance, Research projects.
FY 84 budget for the maintenance and purchase of road maintenance machinery, including snow removal machinery, is discussed. Also explained are plans for developing new types of machinery and engineering projects involved.

42-1199
Snow countermeasures in the Maibara district of the New Tokaido trunkline. [Tokaido Shinkansen Maibara chiku setsugai taisaku ni tsuite],
Seki, M., et al, *JREA: Japan Railway Engineers' Association*, Dec. 1984, 27(12), p.15847-15852, In Japanese.
Morishita, T., Goto, S.
Heating, Snowsheds, Snow removal, Railroad tracks, Sprinklers, Steel structures, Soil stabilization, Wooden structures, Infrared radiation, Japan—Maibara, Japan—Sekigahara Tunnel.

42-1200
History of conquering snow. [Kokusetsu no rekishi],
Onuma, T., *Japan Society of Civil Engineering. Journal (Doboku Gakkaishi)*, Feb. 1986, 71(2), p.9-12, In Japanese.
Snow removal, Damage, History, Research projects, Japan.

42-1201
New railroad trunklines: impact on snowy regions and snow removal techniques. [Yukiguni e no shinkansen inpakuto to sono kokusetsu gijutsu],
Miyaguchi, K., *Japan Society of Civil Engineering. Journal (Doboku Gakkaishi)*, Feb. 1986, 71(2), p.12-17, In Japanese. 1 ref.
Heating, Railroads, Snowsheds, Transportation, Cold weather operation, Snow removal, Sprinklers, Railroad tracks, Steel structures, Infrared radiation, Tourism, Japan—Tohoku, Japan—Joetsu, Japan—Tokaido.

42-1202
New snow removal techniques. [Kokusetsu o meguru shin gijutsugun],
Kuriyama, H., *Japan Society of Civil Engineering. Journal (Doboku Gakkaishi)*, Feb. 1986, 71(2), p.20-22, In Japanese. 6 refs.
Snow removal, Heat recovery, Trenching, Geothermal thawing, Underground pipelines, Water pipes, Heat pipes, Pipeline heating, Heat pumps.

42-1203
Paths along snow trenches turn into green promenades in summer in Aral. [Araishi ni miru ryusetsu ryokudo],
Horikawa, T., *Japan Society of Civil Engineering. Journal (Doboku Gakkaishi)*, Feb. 1986, 71(2), p.40-43, In Japanese.
Snow removal, Roads, Sidewalks, Trenching, Japan—Aral.

42-1204
What price Canadian sovereignty.
Pullen, T.C., *U.S. Naval Institute. Proceedings*, Sep. 1987, 113(9), p.66-72, 2 refs.
Military operation, Icebreakers, Northwest Passage, Canada—Northwest Territories—Arctic Archipelago.

42-1205
ComNavForArctic.
LeSchack, L.A., *U.S. Naval Institute. Proceedings*, Sep. 1987, 113(9), p.74-80, 6 refs.
Military operation, Submarines.

42-1206
Understanding sea ice.
LeSchack, L.A., *U.S. Naval Institute. Proceedings*, Sep. 1987, 113(9), p.76-79.
Sea ice, Military operation, Submarines, Subglacial navigation.

42-1207
Fighting subs under the ice.
Atkeson, E.B., *U.S. Naval Institute. Proceedings*, Sep. 1987, 113(9), p.81-87, 13 refs.
Subglacial navigation, Submarines, Military operation.

42-1208
Arctic environment.
Johnson, L., *U.S. Naval Institute. Proceedings*, Sep. 1987, 113(9), p.86-87.
Sea ice, Drift, Pressure ridges, Polynyas, Meteorological factors.

42-1209
Dynamics at the solid-liquid transition: experiments at the freezing point.
Bilgram, J.H., *Physics reports*, 1987, 153(1), p.1-89, 347 refs.
Phase transformations, Liquid solid interfaces, Ice melting, Freezing points, Crystals.

42-1210
Transportation—the key problem in developing the production potential of the North.
Nekrasov, N.N., *Problems of the north*, [1987], No.20, p.1-26, For Russian original see 34-1620. Draft copy.
Helicopters, Transportation, Pipelines, Economic development, Rivers, Airplanes, Baykal Amur railroad.

42-1211
Economic development and the formation of a base transportation network in the Soviet north.
Burkhanov, V.F., *Problems of the north*, [1987], No.20, p.26-44, For Russian original see 34-1621. 5 refs. Draft Copy.
Ice navigation, Economic development, Icebreakers, Transportation, Electric power, Baykal Amur railroad, Construction.

42-1212
Peculiarities and problems of interregional transportational links and economic ties in the northern zone of the USSR.
Puzanova, V.F., *Problems of the north*, [1987], No.20, p.45-86, For Russian original see 34-1622. 8 refs. Draft copy.
Transportation, Economic development, Petroleum industry, Coal, Mining, Forestry, Construction equipment, Construction materials.

42-1213
Baikal-Amur main line (BAM): problems of regional economic links and resource development in the Near North.
D'iakonov, F.V., *Problems of the north*, [1987], No.20, p.87-115, For Russian original see 34-1623. Draft copy.
Economic development, Construction, Transportation, Baykal Amur railroad, Cost analysis.

42-1214
Problems of increasing the economic efficiency of transportation in the Komi ASSR.
Kuratova, E.S., *Problems of the north*, [1987], No.20, p.116-129, For Russian original see 34-1624. 8 refs. Draft copy.
Transportation, Railroads, Motor vehicles, Roads, Permafrost beneath roads, Taiga, Swamps.

42-1215
Special features of automotive transport in northern conditions.
Khlebnikov, A.M., et al, *Problems of the north*, [1987], No.20, p.130-161, For Russian original see 34-1625. 22 refs. Draft copy.
Krestovnikov, G.A.
Motor vehicles, Roads, Permafrost beneath roads, Trafficability, Tracked vehicles, Tires, Rubber ice friction, Rubber snow friction, Swamps, All terrain vehicles, Analysis (mathematics).

42-1216
Problems in the development of high mobility transport vehicles for northern regions.
Korsak, V.K., *Problems of the north*, [1987], No.20, p.162-204, For Russian original see 34-1626. 10 refs. Draft copy.
Tracked vehicles, All terrain vehicles, Air cushion vehicles, Tractors, Motor vehicles.

42-1217
Rational design and technology for building pile foundations for above-ground transport structures and elevated motor roads and railroads in the northern regions.
Burkhanov, V.F., et al, *Problems of the north*, [1987], No.20, p.205-237, For Russian original see 34-1627. Draft copy.
Vartanov, S.Kh., Dertsakian, A.K., Targulian, IU.O.
Foundations, Bridges, Piles, Permafrost beneath structures, Railroads, Pipelines, Roads, Permafrost control, Drilling, Design.

42-1218
Effectiveness of the use of air transport in industrial construction in the North.
Gromov, N.N., et al, *Problems of the north*, [1987], No.20, p.238-261, For Russian original see 34-1628. 5 refs. Draft copy.
Chudnovskii, A.D.
Transportation, Airplanes, Industrial buildings, Construction.

42-1219
Prospects of using aerial vehicles for moving freight.
Lapin, M.S., *Problems of the north*, [1987], No.20, p.262-278, For Russian original see 34-1629. 7 refs. Draft copy.
Transportation, Air cushion vehicles, Airplanes, Helicopters, Dirigibles.

42-1220
Passenger transit in northern settlement.
Belinskii, A.IU., *Problems of the north*, [1987], No.20, p.279-297, For Russian original see 34-1630. Draft copy.
Transportation, Airplanes, Air cushion vehicles, Motor vehicles, All terrain vehicles, Swamps, Ice navigation, Snow roads, Ice roads, Baykal Amur railroad.

42-1221
Modeling of transport links between development bases and developing regions.
Adzhiev, M.E., *Problems of the north*, [1987], No.20, p.298-309, For Russian original see 34-1631. 9 refs. Draft copy.
Economic development, Transportation, Mathematical models.

42-1222
Problem of providing northern industry with modified equipment.
Dashkova, T.E., *Problems of the north*, [1987], No.20, p.310-321, For Russian original see 34-1632. 5 refs. Draft copy.
Transportation, Equipment, Construction equipment, Winter maintenance, Design.

42-1223
Problems of mechanized transport in the mining industry of Yakutia.
Vlasov, V.I., *Problems of the north*, [1987], No.20, p.322-333, For Russian original see 34-1633. 14 refs. Draft copy.
Mining, Transportation, Excavation, Permafrost.

42-1224
Trends in the development of the transportation network in the Canadian North.
Cherkasov, A.I., *Problems of the north*, [1987], No.20, p.334-369, For Russian original see 34-1634. 18 refs. Draft copy.
Transportation, Motor vehicles, Air cushion vehicles, Helicopters, Airplanes, Railroads, Pipelines.

42-1225
Use of air cushion vehicles in the Canadian North.
Mikhailov, V.V., et al, *Problems of the north*, [1987], No.20, p.370-387, For Russian original see 34-1635. Draft copy.
Kocheulov, V.P.
Transportation, Air cushion vehicles, All terrain vehicles.

42-1226
Discussion of urgent scientific and economic problems of northern development.
Glabina, N.K., et al, *Problems of the north,* [1987], No.20, p.388-417, For Russian original see 34-1636. Draft copy.
Puzanova, V.F., Tikhonov, A.V.
Economic development, All terrain vehicles, Transportation, Research projects, Air cushion vehicles, Excavation, Environmental protection, Baykal Amur railroad.

42-1227
Model for the plastic flow of landslides.
Savage, W.Z., et al, *U.S. Geological Survey. Professional paper,* 1986, No.1385, 32p., 24 refs.
Smith, W.K.
Landslides, Plastic flow, Mountain glaciers, Basal sliding, Velocity, Flow rate, Gravity, Mathematical models, Compressive properties.

42-1228
Analysis and interpretation of ice-deformed sediments from Harrison Bay, Alaska.
Fischbein, S.A., *U.S. Geological Survey. Open-file report,* 1987, No.87-262, 73p., Refs. p.69-73.
Ice scoring, Marine geology, Bottom sediment, Deformation, Grounded ice, Drill core analysis, Ice solid interface, United States—Alaska—Harrison Bay.

42-1229
1985 global ice impact tests on the USCGC *Polar Sea*.
Cowper, B., et al, *Transport Canada. Report,* May 1987, TP 8496E, 72p. + appends., With French summary. 21 refs.
Edgecombe, M.
Ice loads, Icebreakers, Pressure ridges, Ice pressure, Impact strength, Ice solid interface, Computer applications, Compressive properties, Velocity, Ships.

42-1230
Ice thickness data, winter 1981-1982.
Canada. Atmospheric Environment Service. Ice Centre, Ottawa, Ontario, 1987, 58p., In English and French.
Ice cover thickness, Freezeup, Ice breakup, Ice formation, Ice deterioration, Sea ice, River ice, Lake ice, Canada.

42-1231
Advances in ice mechanics in West Germany.
Schwarz, J., *Applied mechanics reviews,* Sep. 1987, 40(9), p.1208-1213, Presented at the 6th International Symposium and Exhibit on Offshore Mechanics and Arctic Engineering, Houston, TX, Mar. 1-6, 1987. 18 refs.
Ice mechanics, Ice loads, Ice models, Ice cover strength, Offshore structures, Piers, Time factor.

42-1232
Synopsis of an investigation of the acoustical properties of sea ice. Final report under Contract N000-84-C-0195.
Vidmar, P.J., *Texas. University. Applied Research Laboratories. Technical report,* Feb. 3, 1987, No.ARL-TR-87-6, 79p., ADA-179 523, 21 refs.
Ice acoustics, Sea ice, Ultrasonic tests, Ice cores, Acoustic properties, Temperature effects, Velocity, Compressive properties, Anisotropy.

42-1233
Snow cover in mountains and avalanches. [Snezhnyĭ pokrov v gorakh i laviny],
Voĭtkovskiĭ, K.F., ed, Moscow, Nauka, 1987, 152p., In Russian. For individual papers see 42-1234 through 42-1252. Refs. passim.
Diurgerov, M.B., ed.
Alpine landscapes, Snow cover distribution, Snow density, Snow depth, Snow surveys, Avalanche forecasting, Avalanche formation, Avalanche engineering.

42-1234
Long-term variations in snow cover and avalanche danger in mountains. [Mnogoletniaia izmenchivost' snezhnogo pokrova i lavinnoĭ opasnosti v gorakh SSSR],
Kondakova, N.L., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.4-16, In Russian. 5 refs.
Troshkina, E.S.
Snow cover distribution, Snow depth, Avalanche formation, Countermeasures, Avalanche engineering, Avalanche mechanics, Alpine landscapes.

42-1235
Influence of local natural factors on snow cover distribution. [Vliianie lokal'nykh prirodnykh faktorov na raspredelenie snezhnogo pokrova v gorakh],
Severskiĭ, I.V., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.16-23, In Russian. 17 refs.
Severskiĭ, S.I.
Slope orientation, Slope processes, Snow cover distribution, Snow cover stability, Vegetation factors, Avalanche formation, Avalanche triggering, Avalanche engineering, Alpine landscapes.

42-1236
Snow cover of western Transcaucasus. [Snezhnyĭ pokrov Zapadnogo Zakavkaz'ia],
Kondakova, N.L., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.24-28, In Russian. 7 refs.
Zhigul'skiĭ, A.A., Troshkina, E.S., Khasanov, R.N.
Snow cover distribution, Snow surveys, Snow depth, Avalanche engineering, Avalanche formation, Avalanche mechanics, Alpine landscapes.

42-1237
Regularities governing snow cover distribution in the Khibiny Mountains. [Zakonomernosti raspredeleniia snezhnogo pokrova v Khibinskom gornom massive],
Sapunova, G.G., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.28-36, In Russian. 7 refs.
Sapunov, V.N.
Snow cover distribution, Slope processes, Slope orientation, Snow depth, Snow density, Avalanche formation, Alpine landscapes.

42-1238
Snow cover in Providence Bay in the winter of 1983/84. [Snezhnyĭ pokrov v bukhte Provideniia v zimu 1983/84 g.],
Sokolov, V.M., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.37-41, In Russian.
Shnyparkov, A.L.
Synoptic meteorology, Snow cover distribution, Snow cover structure, Snow mechanics, Meteorological charts, Meteorological data, USSR—Chukotskiy Peninsula.

42-1239
Heat balance of melting snow cover on mountain slopes. [Teplovoĭ balans taiushchego snezhnogo pokrova na sklonakh gor],
Okolov, V.P., Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.42-48, In Russian. 4 refs.
Snow melting, Solar radiation, Slope orientation, Radiation balance, Turbulence, Heat balance, Heat transfer, Mass transfer.

42-1240
Characteristics of wet snow metamorphism and its physico-mechanical properties. [Osobennosti metamorfizma i fiziko-mekhanicheskie svoĭstva mokrogo snega],
Ushakova, L.A., Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.48-57, In Russian. 12 refs.
Wet snow, Hydrothermal processes, Metamorphism (snow), Snow physics, Avalanche forecasting.

42-1241
Electric phenomena in snowstorms. [Elektricheskie iavleniia vo vremia meteleĭ],
Mordovina, L.S., Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.57-61, In Russian. 6 refs.
Snowstorms, Atmospheric electricity, Electric fields, Snow water content, Snow mechanics, Avalanche forecasting.

42-1242
Heat and mass transfer in stratified snow. [Osobennosti teplo- i massoperenosa v stratifitsirovannoĭ snezhnoĭ tolshche],
Golubev, V.N., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.62-74, In Russian. 21 refs.
Guseva, E.V.
Snow melting, Snow cover structure, Snow depth, Snow physics, Mathematical models, Heat transfer, Mass transfer.

42-1243
Temperature effect on tensile strength of snow. [Vliianie temperatury na soprotivlenie snega razryvu],
Voĭtkovskiĭ, K.F., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.74-81, In Russian. 15 refs.
Golubev, V.N.
Snow physics, Snow strength, Tensile properties, Mathematical models.

42-1244
Penetrometry technique of determining the strength of snow. [Opredelenie prochnostnykh svoĭstv snezhnogo pokrova metodom penetratsii],
Zhidkov, V.A., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.82-92, In Russian. 19 refs.
Samoĭlov, R.S., Ushakov, A.I.
Snow cover stability, Snow cover structure, Snow strength, Tests, Penetrometers.

42-1245
Comparing the results of stamp and penetrometer methods of testing snow cover. [Sravnenie rezul'tatov shtampovykh i penetratsionnykh metodov ispytaniĭ snezhnogo pokrova],
Ermakov, K.K., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.93-101, In Russian. 16 refs.
Samoĭlov, R.S.
Snow physics, Snow cover stability, Snow strength, Tests, Penetrometers.

42-1246
Compilation of avalanche-danger maps, based on analyses of aerial photographs. [Sostavlenie kart pokazateleĭ lavinnoĭ opasnosti na osnove analiza vysotnykh aerofotosnimkov],
Kravtsova, V.I., Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.102-108, In Russian. 5 refs.
Mapping, Aerial surveys, Photointerpretation, Avalanche forecasting, Avalanche engineering, USSR—Altai Mountains.

42-1247
Avalanche formation in the Elbrus Mountain area (Central Caucasus). [Lavinoobrazovanie v Priel'brus'e (Tsentral'nyĭ Kavkaz)],
Kondakova, N.L., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.109-118, In Russian. 2 refs.
Troshkina, E.S., Nezhinskiĭ, V.A., Salova, T.A.
Snow cover distribution, Slope orientation, Snow depth, Avalanche formation, Snow cover structure, Snow cover stability, USSR—Elbrus Mountain.

42-1248
Winters of increased avalanche danger in the Greater Caucasus. [Zimy povyshennoĭ lavinnoĭ opasnosti na Bol'shom Kavkaze],
Volodicheva, N.A., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.118-125, In Russian. 41 refs.
Oleĭnikov, A.D.
Avalanche formation, Snow surveys, Snow cover distribution, Slope orientation, Snow cover stability, USSR—Caucasus.

42-1249
Main factors of avalanche formation in little studied areas of the eastern Sayan Mountains. [Vedushchie faktory lavinoobrazovaniia v maloizuchennykh gornykh raĭonakh Vostochnogo Saiana],
Volodicheva, N.A., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.126-132, In Russian. 8 refs.
Pashkov, A.D.
Avalanche formation, Snow cover distribution, Slope orientation, Snow cover stability, Meteorological factors, USSR—Sayan Mountains.

42-1250
Effectiveness of avalanche countermeasures and protective structures. [Effektivnost' protivolavinnykh meropriiatiĭ i sooruzheniĭ],
Zhigul'skiĭ, A.A., Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.132-137, In Russian. 8 refs.
Snow surveys, Avalanche formation, Avalanche triggering, Avalanche engineering, Avalanche deposits, Avalanche mechanics, Countermeasures.

42-1251
Evaluation of the effectiveness of avalanche-protection measures. [Prognoznaia otsenka effektivnosti protivolavinnykh meropriiatiĭ],
Troshkina, E.S., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.137-143, In Russian. 3 refs.
Voĭtkovskiĭ, K.F.
Avalanche forecasting, Avalanche engineering, Classifications, Countermeasures.

42-1252
Methods of determining the degree of regional damage done by avalanches. [K metodike opredeleniia stepeni porazheniia territorii lavinami],
Ganieva, R.G., et al, Snezhnyĭ pokrov v gorakh i laviny (Snow cover in mountains and avalanches) edited by K.F. Voĭtkovskiĭ and M.B. Diurgerov, Moscow, Nauka, 1987, p.144-147, In Russian. 5 refs.
Kanaev, L.A.
Avalanche formation, Avalanche mechanics, Impact strength, Damage, Avalanche engineering.

42-1253
Weather forecasts in Kazakhstan. [Prognozy pogody v Kazakhstane],
Turulina, G.K., ed, *Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1987, Vol.96, 136p., In Russian. For selected paper see 42-1254. 5 refs.
Avalanche engineering, Slope processes, Avalanche forecasting, Avalanche formation, Avalanche triggering, Avalanche mechanics.

42-1254
Characteristics of avalanche ejection distance on counter-slopes of V-shaped valleys. [Osobennosti dal'nosti vybrosa lavin na kontrskiony V-obraznykh dolin],
Popov, V.I., et al, *Kazakhskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1987, Vol.96, p.122-128, In Russian. 5 refs.
Podstrechnyĭ, A.N., Kolesnikov, E.I.
Avalanche engineering, Avalanche deposits, Avalanche mechanics, Avalanche wind, Slope processes, Avalanche erosion.

42-1255
Experimental thawing of permafrost soils in bases of reconstructed main building of the Chita-I thermoelectric power plant.
Abashev, N.V., et al, *Soil mechanics and foundation engineering,* Sep.-Oct. 1986 (Pub. Mar. 87), 23(5), p.178-182, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 3 refs.
Shmyrin, A.I.
Industrial buildings, Permafrost beneath structures, Permafrost bases, Permafrost thermal properties, Thaw weakening.

42-1256
Freezing rate determination by the isotopic composition of the ice.
Souchez, R., et al, *Geophysical research letters,* June 1987, 14(6), p.599-602, 9 refs.
Tison, J.L., Jouzel, J.
Ice cores, Ice composition, Isotope analysis, Freezing rate, Antarctica—Roi Beaudouin Station, Antarctica—Plateau Station.
The distribution of an isotopic species, HDO (deuterium) or H2O-18 (oxygen), in ice formed by the migration of a well-defined freezing front in water is dependent on the freezing rate. Development of a box diffusion model combined with the boundary layer concept leads to a possibility of prediction of the freezing rate in nature by the determination of the isotopic composition of the ice in *delta*D or *delta*O-18. The isotopic distribution in ice formed during experiments conducted with variable freezing rates gives results in accordance with the model. Investigation on lake ice formed under well-known climatic conditions provides a further test of the model. Ice used in this study was taken from cores drilled at Roi Beaudouin and Plateau Stations. (Auth.)

42-1257
Application of ice nucleation kinetics in orographic clouds.
Blumenstein, R.R., et al, *Journal of climate and applied meteorology,* Oct. 1987, 26(10), p.1363-1376, 26 refs.
Rauber, R.M., Grant, L.O., Finnegan, W.G.
Ice nuclei, Cloud physics, Cloud seeding, Laboratory techniques.

42-1258
Pattern recognition technique for distinguishing surface and cloud types in the polar regions.
Ebert, E., *Journal of climate and applied meteorology,* Oct. 1987, 26(10), p.1412-1427, 30 refs.
Cloud cover, Ice cover, Snow cover, Terrain identification, Remote sensing.

42-1259
Satellite passive microwave studies of the Sea of Okhotsk ice cover and its relation to oceanic processes, 1978-1982.
Alfultis, M.A., et al, *Journal of geophysical research,* Nov. 15, 1987, 92(C12), p.13,013-13,028, 37 refs.
Martin, S.
Sea ice, Remote sensing, Ice cover effect, Sea water, Polynyas, Okhotsk Sea.

42-1260
Comparison of simulated and observed fluctuations in summertime Arctic surface albedo.
Ross, B., et al, *Journal of geophysical research,* Nov. 15, 1987, 92(C12), p.13,115-13,125, 31 refs.
Walsh, J.E.
Ice melting, Snow melting, Albedo, Models, Polar regions.

42-1261
Onset of spring melt in first-year ice regions of the Arctic as determined from scanning multichannel microwave radiometer data for 1979 and 1980.
Anderson, M.R., *Journal of geophysical research,* Nov. 15, 1987, 92(C12), p.13,153-13,163, 22 refs.
Sea ice, Ice melting, Ice cover effect, Climate, Polar regions.

42-1262
Coupled one-dimensional sea ice-ocean model.
Lemke, P., *Journal of geophysical research,* Nov. 15, 1987, 92(C12), p.13,164-13,172, 26 refs.
Sea ice, Sea water, Mathematical models, Thermodynamics.
A prognostic one-dimensional mixed layer-pycnocline model describing the vertical structure of the upper ocean is coupled to a thermodynamic sea ice model. The coupled prognostic model is compared with the more usual sea ice model overlying a fixed mixed layer with constant oceanic heat flux and is then applied to investigate the effect of temporal and regional variations of the entrained oceanic heat flux on the sea ice cover in both polar regions. In the southern ocean a standard simulation is compared with two perturbation experiments which both describe the occurrence of a polynya. In the Arctic Ocean the effect of possible Soviet river diversions is investigated. Finally, the response of the coupled model to paleoclimatic forcing and boundary conditions is presented. (Auth.)

42-1263
Transportation vehicles with gas-turbine engines. [Transportnye mashiny s gazoturbinnymi dvigateliami],
Popov, N.S., et al, Leningrad, Mashinostroenie, 1987, 259p., In Russian with abridged English table of contents enclosed. 65 refs.
Tracked vehicles, Trafficability, All terrain vehicles, Swamps, Forest soils, Paludification, Snow cover.

42-1264
New data in Quaternary geochronology. For the 12th INQUA Congress, Canada, 1987. [Novye dannye po geokhronologii chetvertichnogo perioda. K XII kongressu INKVA, Kanada, 1987 g.],
Punning, IA.-M.K., ed, Moscow, Nauka, 1987, 256p., In Russian. For selected papers see 42-1265 through 42-1267. Refs. passim.
Ivanova, I.K., ed, Kind, N.V., ed, Chichagova, O.A., ed.
Paleoclimatology, Meetings, Permafrost dating, Ground ice, Ice wedges, Ice dating, Isotope analysis.

42-1265
Edoma deposits of western Siberia. [Edomnye otlozheniia Zapadnoĭ Sibiri],
Bolikhovskiĭ, V.F., Novye dannye po geokhronologii chetvertichnogo perioda. K XII kongressu INKVA, Kanada, 1987 g. (New data in Quaternary geochronology. For the 12th INQUA Congress, Canada, 1987), Moscow, Nauka, 1987, p.128-135, In Russian. 13 refs.
Frozen fines, Permafrost beneath rivers, Alluvium, Permafrost structure, Ground ice, Ice dating, Ice composition, Edoma complex, Ice wedges, Ice veins.

42-1266
Correlation of paleoclimatic events from oxygen-isotope diagrams of ice wedges. [Problemy korreliatsii paleoklimaticheskikh sobytiĭ po izotopno-kislorodnym diagrammam povtorno-zhil'nykh l'dov],
Vasil'chuk, IU.K., Novye dannye po geokhronologii chetvertichnogo perioda. K XII kongressu INKVA, Kanada, 1987 g. (New data in Quaternary geochronology. For the 12th INQUA Congress, Canada, 1987), Moscow, Nauka, 1987, p.136-143, In Russian. 17 refs.
Ice wedges, Paleoclimatology, Isotope analysis, Permafrost dating, Oxygen isotopes, Edoma complex.

42-1267
Stratification of permafrost sections in the Kolyma Plain using oxygen-isotope technique. [Stratifikatsiia razrezov mnogoletnemerzlykh porod Kolymskoĭ nizmennosti izotopno-kislorodnym metodom],
Arkhangelov, A.A., et al, Novye dannye po geokhronologii chetvertichnogo perioda. K XII kongressu INKVA, Kanada, 1987 g. (New data in Quaternary geochronology. For the 12th INQUA Congress, Canada, 1987), Moscow, Nauka, 1987, p.143-149, In Russian. 13 refs.
Frozen fines, Oxygen isotopes, Ice composition, Permafrost dating, Ground ice, Isotope analysis, Edoma complex, Ice veins.

42-1268
Project "Frigonav" hovercraft type 140 operating experience; February-March 1987.
Jones, D., *Transport Canada. Report,* Apr. 1987, TP 8432E, 14p. + append., With French summary.
Icebreakers, Air cushion vehicles, Ice navigation, Ice breaking, River ice.

42-1269
Altitude trends in permafrost active layer thickness, Kluane Lake, Yukon Territory.
Harris, S.A., *Arctic,* Sep. 1987, 40(3), p.179-183, With French summary. 16 refs.
Active layer, Alpine tundra, Permafrost, Vegetation, Mountains, Suprapermafrost ground water, Drainage, Canada—Yukon Territory—Kluane Lake.

42-1270
Vegetation distributions along lichen-dominated slope of opposing aspect in the eastern Canadian Subarctic.
Petzold, D.E., et al, *Arctic,* Sep. 1987, 40(3), p.221-224, 9 refs.
Mulhern, T.
Tundra, Lichens, Slopes, Vegetation, Topographic features, Biomass, Plants (botany), Canada—Quebec, Canada—Labrador.

42-1271
Search for an ice buoy.
Kies, P.J., *Mariners weather log,* Sep. 1986, 30(3), p.140-142, Excerpted from Technical bulletin, National Data Buoy Center.
Floating structures, Weather stations, Remote sensing, Icing.

42-1272
Snowmold disease of mountain big sagebrush.
Nelson, D.L., et al, *Phytopathology,* Sep. 1986, 7(9), p.946-951, 21 refs.
Sturges, D.L.
Snow cover effect, Plant physiology.

42-1273
Open-track elevated railroad bridges on the Tsugaru Strait Line. [Tsugaru Kaikyosen kaisho-shiki kokakyo no saiyo ni tsuite],
Murata, K., *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16355-16359, In Japanese.
Bridges, Snow removal, Railroad tracks, Mechanical tests, Dynamic loads, Vibration.

42-1274
Snow countermeasures practiced by the Japan National Railroad: non-trunklines. [Kokutetsu ni okeru zairaisen no yuki taisaku],
Miyazaki, M., *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16360-16362, In Japanese.
Cold weather operation, Snow removal, Railroad tracks, Trenching, Sprinklers, Railroads.

42-1275
Snow countermeasures in Niigata district: non-trunklines. [Niigata chiku ni okeru zairaisen yuki taisaku no jitsujo],
Uchida, T., *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16363-16367, In Japanese.
Cold weather operation, Snow removal, Railroad tracks, Trenching, Water pipes, Railroads, Ground water, Japan—Niigata Prefecture.

42-1276
Trolley railroad's countermeasures against frost. [Torori-sen no sogai taisaku],
Nagamatsu, Y., et al, *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16375-16377, In Japanese.
Takuchi, O.
Monitors, Railroads, Power line icing, Cold weather operation, Frost protection.

42-1277
Winter operational measures taken by Niigata Transportation Co. [Niigata Kotsu ni okeru toki taisaku],
Sakai, K., *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16378-16379, In Japanese.
Railroads, Power line icing, Railroad tracks, Cold weather operation, Snow removal, Salting, Sprinklers, Wells, Japan—Niigata Prefecture.

42-1278
Snow removal practiced by Toyama Regional Railroad. [Toyama Chiho Tetsudo ni okeru josetsu taisei],
Ito, Y., *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16380-16382, In Japanese.
Railroads, Electric heating, Salting, Snow removal, Railroad tracks, Sprinklers, Japan—Toyama Prefecture.

42-1279
Highway snow and ice removal. [Kosoku doro ni okeru seppyo shori sagyo],
Murakuni, M., *JREA: Japan Railway Engineers' Association,* Nov. 1985, 28(11), p.16383-16387, In Japanese.
Road maintenance, Winter maintenance, Snow removal, Ice prevention, Salting.

42-1280
Hydrodynamic methods of modeling processes developing in seas of the USSR. [Gidrodinamicheskie metody modelirovaniia protsessov na moriakh SSSR],
Kalatskiĭ, V.I., ed, Moscow, Gidrometeoizdat, 1987, 154p., In Russian. For selected paper see 42-1281.
Gosudarstvennyĭ okeanograficheskiĭ institut.
Sea ice distribution, Hydrothermal processes, Models, Ocean environments, Ice surveys, Human factors, Ice conditions, Environmental impact.

42-1281
Characteristics of ice regime in the Aral Sea and its possible changes. [Osobennosti ledovogo rezhima Aral'skogo moria i vozmozhnye ego izmeneniia],
Chiatiaeva, S.P., Gidrodinamicheskie metody modelirovaniia protsessov na moriakh SSSR (Hydrodynamic methods of modeling processes developing in seas of the USSR) edited by V.I. Kalatskiĭ, Moscow, Gidrometeoizdat, 1987, p.145-149, In Russian. 2 refs.
Gosudarstvennyĭ okeanograficheskiĭ institut.
Sea water, Sea ice distribution, Ice surveys, Chemical composition, Salinity, Human factors, Ice conditions, Ice accretion, Environmental impact.

42-1282
Control of water regime in reclaimed lands of the nonchernozem zone (hydrological aspects). [Upravlenie vodnym rezhimom na melioriruemykh zemliakh v nechernozemnoĭ zone (gidrologicheskie aspekty)],
Kharchenko, S.I., Leningrad, Gidrometeoizdat, 1987, 239p., In Russian with abridged English table of contents enclosed. 212 refs.
Hydrology, Cryogenic soils, Land reclamation, Heat balance, Water balance, Radiation balance.

42-1283
Evaluation of a modified water cannon system to control small iceberg masses.
Warbanski, G., et al, *Environmental Studies Research Funds. Report,* Aug. 1987, No.081, 142p., With French summary. 10 refs.
Banke, E.
Ice control, Icebergs, Hydraulic jets, Ice removal, Drift, Velocity, Ice conditions, Tests, Ice deterioration.

42-1284
Influence of bow shape on ice transiting vessel performance parameters.
Dubiel, J., et al, *Transport Canada. Report,* June 1987, TP 8667E, Sable Maritime Ltd., FR 1728K, 57p., With French summary. 44 refs.
Phillips, L.
Icebreakers, Ice breaking, Ice removal, Ice navigation, Ice conditions, Ice strength, Design.

42-1285
Development of an analytical model of the hydrodynamic added mass of a ship ramming ice. Vol.2: main report.
Ghoneim, G.A., et al, *Transport Canada. Report,* Mar. 30, 1987, TP 8392E, 169p., With French summary. 61 refs.
Murray, M.A.
Icebreakers, Ice loads, Hydrodynamics, Ice breaking, Mathematical models, Design, Ice solid interface, Tests.

42-1286
Hot coolant transfusion (HCT) preheated kit for M113A1 vehicles.
Shankhla, V.S., et al, *Canada. Defence Research Establishment Suffield, Ralston, Alberta. Suffield memorandum,* Sep. 1987, No.1197, 12p. + figs., 8 refs.
Stupich, T.F., Linnington, A.
Cold weather operation, Vehicles, Military equipment, Diesel engines, Engine starters, Heating.

42-1287
Annual report, 1985-1986.
Alaska. University. Institute of Marine Science, [1987], 48p.
Oceanography, Ice water interface, Ice air interface, Marine biology, Models.

42-1288
Oilspill defenses in Alaska: spills in ice foil defenses; environmental protection. *Arctic news-record and polar bulletin,* Spring 1987, 6(1), p.13-16.
Oil spills, Oil recovery, Sea ice, Environmental protection, Detection, Countermeasures, Experimentation, Chemical analysis.

42-1289
Arctic shipping ice research.
Luce, M., *Arctic news-record and polar bulletin,* Spring 1987, 6(1), p.17-21.
Ice navigation, Ice accretion, Ship icing, Ice loads, Icebreakers, Ice conditions, Ice forecasting, Ice breaking, Canada.

42-1290
Where do we go from here? Glaciology: 1987 and beyond.
Meier, M., *Glaciological data,* Oct. 1987, GD-19, p.13-18.
Glaciology, Ice composition, Remote sensing, Chemical analysis, Glaciers.

42-1291
World Data Center-A for Glaciology: the first ten years at the University of Colorado.
Barry, R.G., *Glaciological data,* Oct. 1987, GD-19, p.19-32, 12 refs
Glaciology, Snow surveys, Ice surveys, Microwaves, Organizations.

42-1292
Cryospheric Data Management System. *Glaciological data,* Oct. 1987, GD-19, p.51-55.
Glaciology, Spaceborne photography, Remote sensing, Snow surveys, Ice surveys, Microwaves, Computer applications.

42-1293
Arctic ice—as viewed by the designer of ice penetrators.
Young, C.W., *Sandia National Laboratories, Albuquerque, N.M. Report,* 1986, SAND-86-1028C, 3p. DE86-010 471, CONF-8606114-2.
Ice cover thickness, Penetration, Measuring instruments, Design, Ice loads.

42-1294
Gulf of Alaska: physical environment and biological resources.
Hood, D.W., ed, U.S. NOAA, Ocean Assessments Division, Alaska Office, 1987, 655p., Refs. passim. For selected papers see 42-1295 and 42-1296.
Zimmerman, S.T., ed.
Oceanography, Marine biology, Coastal topographic features, Geomorphology, Sea ice, Bottom sediment, Biomass, United States—Alaska—Gulf of Alaska.

42-1295
Physical setting and scientific history.
Hood, D.W., Gulf of Alaska: physical environment and biological resources. Edited by D.W. Hood and S.T. Zimmerman, U.S. NOAA, Ocean Assessments Division, Alaska Office, 1987, p.5-27, Refs. p.24-27.
Ice conditions, Oceanography, Geography, Coastal topographic features, Marine biology, Snow cover distribution, Biomass, Plankton, Maps, United States—Alaska—Gulf of Alaska.

42-1296
Geomorphology, sediment, and sedimentary processes.
Hampton, M.A., et al, Gulf of Alaska: physical environment and biological resources. Edited by D.W. Hood and S.T. Zimmerman, U.S. NOAA, Ocean Assessments Division, Alaska Office, 1987, p.93-143, Refs. p.134-143.
Carlson, P.R., Lee, H.J., Feely, R.A.
Geomorphology, Grounded ice, Bottom sediment, Sea ice, Ocean bottom, Glacial deposits, Coastal topographic features, Seismic surveys, Classifications, Oceanography, United States—Alaska—Gulf of Alaska.

42-1297
Second Assembly of the International Association of Hydrological Sciences. [Vtoraia assambleia mezhdunarodnoĭ assotsiatsii gidrologicheskikh nauk],
Kotliakov, V.M., et al, *Materialy gliatsiologicheskikh issledovanĭ,* Jan. 1987, Vol.59, p.3-7, In Russian.
Kuchment, L.S.
Meetings, Glaciology, Snow hydrology, Snow melting, Snow surveys, Snow survey tools.

42-1298
Third all-union conference on avalanches. [Tret'e vsesoiuznoe soveshchanie po lavinam],
Samoĭlov, R.S., et al, *Materialy gliatsiologicheskikh issledovanĭ,* Jan. 1987, Vol.59, p.7-14, In Russian.
Chernous, P.A.
Meetings, Avalanches.

42-1299
International Symposium on the Physics and Chemistry of Ice. [Mezhdunarodnyĭ simpozium po fizike i khimii l'da],
Punning, IA.-M.K., et al, *Materialy gliatsiologicheskikh issledovanĭ,* Jan. 1987, Vol.59, p.14-17, In Russian.
Petrenko, V.F.
Meetings, Ice crystal growth, Ice physics, Chemical composition, Snow physics, Elastic properties, Electrical properties.

42-1300
Second international symposium on remote sensing in glaciology. [Vtoroĭ mezhdunarodnyĭ simpozium po distantsionnym metodam issledovaniia v gliatsiologii],
Macheret, IU.IA., et al, *Materialy gliatsiologicheskikh issledovanĭ,* Jan. 1987, Vol.59, p.17-23, In Russian.
Kazanskiĭ, A.B., Krenke, A.N.
Meetings, Glaciers, Snow cover distribution, Snow surface, Snow survey tools, Remote sensing, Spaceborne photography.

42-1301
International symposium on snow avalanches. [Mezhdunarodnyĭ simpozium po problemam snezhnykh lavin],
Voĭtkovskiĭ, K.F., *Materialy gliatsiologicheskikh issledovanĭ,* Jan. 1987, Vol.59, p.23-29, In Russian.
Avalanche formation, Snow physics, Snow cover structure, Snow cover stability, Avalanche forecasting, Maps, Snow survey tools.

42-1302
Evolution of thermal conditions in Central Antarctica for the last 150,000 years determined from oxygen isotope studies of a core from Vostok Station. [Evoliutsiia termicheskikh usloviĭ Tsentral'noĭ Antarktidy za 150 tysiach let po izotopno-kislorodnym issledovaniiam kerna so stantsii Vostok],
Kotliakov, V.M., et al, *Materialy gliatsiologicheskikh issledovanĭ,* Jan. 1987, Vol.59, p.30-37, In Russian with English summary. 43 refs.
Ice cores, Paleoclimatology, Oxygen isotopes, Antarctica—Vostok Station.
The ice core from Vostok Station, from the surface to a depth of 2081 m, agrees with isotope horizons 1-6 of oceanic sediments, with the age up to 150-160 thousand years. The data obtained for the central areas of East Antarctica testify to the conditions of glacial maximum during the isotope stages 2, 4, 5(d), 6; interstadials 3, 5(a-c) and interglacial 5(e) and variations of the mean annual temperature, respectively by -6, -8, -2, -5 and 3-4 deg, as compared to the present-day temperature. Comparison of these data with numerous data on oceanic sediments suggests the transition from the interglacial to the Last Ice Age in polar latitudes about 115,000 years ago, while in the temperate and low latitudes it took place only 75,000 years ago. (Auth.)

42-1303
Modelling of Quaternary glaciations. [Modelirovanie chetvertichnykh oledenenii],
Verbitskii, M.IA., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.38-42, In Russian with English summary. 10 refs.
Monin, A.S., Chalikov, D.V.
Ice models, Climatic changes, Paleoclimatology, Pleistocene.
A thermohydrodynamic model of the system Glaciers-Ocean-Atmosphere-Astenosphere made it possible to analyze the causes of ice ages. Tests of the sensitivity of this model to the changes of initial conditions have shown that the Earth's climate is insensitive under the present-day conditions of insolation and position of the continents. Climatic system is established to have 5 steady states, associated with different spreading of the ice cover. Mechanisms governing the transition of one climate into another are analyzed. It is concluded that location, form, dimensions and relief of the continents are decisive agents of the global climatic changes. (Auth.)

42-1304
Heat- and mass-exchange at the lower surface of the Ross Ice Shelf. [Teplo- i massoobmen u nizhneĭ poverkhnosti shel'fovogo lednika Rossa],
Raĭkovskiĭ, IU.V., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.42-48, In Russian with English summary. 22 refs.
Ice models, Heat transfer, Mass transfer, Antarctica—Ross Ice Shelf.
Theoretical examination of heat and mass exchange at the lower surface of the Ross Ice Shelf associated with sea water circulation in subglacial sea due to the tidal pump, has been made. Conditions generating the zone of melting as well as the zone of ice freezing at the lower surface of the ice shelf are shown. The melting-freezing process has been estimated from the developed theoretical model. The computations allows to distinguish the zones of intensive melting (from 100 to 50 cm/a at a distance of several km from the ice front); medium intensity melting (from 50 to 10 cm/a at a distance of 100 km from the ice front); feeble melting (from 10 to 0 cm/a); feeble freezing (from 0 to 5 cm/a). The melting zone has a wedge-like form intruding into the central part of the Ross Ice Shelf. (Auth.)

42-1305
Studies of sea ice from medium resolution space photographs of the Caspian Sea. [Izuchenie morskikh l'dov po kosmicheskim snimkam srednego razresheniia (na primere Kaspiĭskogo moria)],
Kravtsova, V.I., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.48-54, In Russian with English summary. 9 refs.
Tarakanchikov, V.V.
Sea ice distribution, Remote sensing, Spaceborne photography, Photointerpretation, Infrared reconnaissance.

42-1306
Cryogenic metamorphism of chemical composition of natural waters as a new trend in science. [Kriogennaia metamorfizatsiia khimicheskogo sostava prirodnykh vod kak novoe nauchnoe napravlenie],
Ivanov, A.V., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.54-61, 28 refs., In Russian with English summary.
Water chemistry, Frost action, Ice formation, Brines, Sea water freezing, Ice crystals, Research projects.

42-1307
Analysis of computation methods for calculating ice formation in a spray cone. [Analiz metodov rascheta protsessa l'doobrazovaniia v kapel'nom fakele],
Sosnovskiĭ, A.V., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.61-68, 10 refs., In Russian with English summary.
Ice formation, Artificial ice, Air temperature, Air water interactions, Spray freezing.

42-1308
Universal method of forecasting snow avalanches and compiling prognostic maps of avalanche danger. [Universal'nyĭ metod prognoza snezhnykh lavin i sostavleniia prognosticheskikh kart lavinnoĭ opasnosti],
Kolesnikov, E.I., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.69-76, 20 refs., In Russian with English summary.
Podstrechnyĭ, A.N.
Snow surveys, Mapping, Avalanche forecasting.

42-1309
Experience in cartographic modeling of the interaction between human activities and nival-glacial systems. [Opyt kartograficheskogo modelirovaniia vzaimodeĭstviia nival'no-gliatsial'nykh sistem i deiatel'nosti cheloveka],
Khromova, T.E., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.77-85, 13 refs., In Russian with English summary.
Models, Glaciation, Sea ice distribution, Land ice, Human factors, Economic development, Polar regions, Alpine glaciation.

42-1310
Problems of utilizing natural resources of mountains (glaciological aspects). [Problemy gornogo prirodopol'zovaniia (nekotorye gliatsiologicheskie aspekty)],
Ananicheva, M.D., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.85-93, 11 refs., In Russian with English summary.
Bichekueva, S.Kh., Suprunenko, IU.P.
Natural resources, Mountain glaciers, Nivation, Alpine landscapes, Economic development.

42-1311
Snow resources and ecological problems of the Alps. [Snezhnye resursy i ekologicheskie problemy Al'p],
Akif'eva, K.V., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.94-98, 18 refs., In Russian with English summary.
Alpine glaciation, Economic development, Snow cover distribution, Snow depth, Snow water equivalent, Snow cover structure, Avalanche formation, Alpine landscapes, Alps.

42-1312
Characteristic features of Scandinavian glaciation according to the World Atlas of Snow and Ice Resources. [Kharakteristika oledeneniia Skandinavii (po kartam Atlasa snezhno-ledovykh resursov mira)],
Tarasova, L.N., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.98-106, 16 refs., In Russian with English summary.
Khromova, T.E.
Mountain glaciers, Maps, Glacier oscillation, Glacier ice, Ice surface, Charts.

42-1313
Liquid precipitation in mountain glacier areas of Scandinavia. [Zhidkie osadki v gorno-lednikovykh raĭonakh Skandinavii],
Davidovich, N.V., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.106-115, 11 refs., In Russian with English summary.
Tarasova, L.N., Chernogaeva, G.M.
Mountain glaciers, Glacier alimentation, Rain, Mapping, Charts.

42-1314
Using the method of free-falling indentor for determining mechanical properties of snow cover. [Ob ispol'zovanii metoda svobodno padaiushchego indentora dlia opredeleniia mekhanicheskikh kharakteristik snezhnogo pokrova],
Epifanov, V.P., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.116-121, 13 refs., In Russian with English summary.
Rusinov, A.A.
Snow cover distribution, Snow density, Snow physics, Snow survey tools, Tests, Test equipment.

42-1315
Methods of quantitative evaluation of meteorological parameters for regionalizing the avalanche-hazard areas of the USSR from types of avalanche regimes. [Metodika kolichestvennoĭ otsenki meteorologicheskikh parametrov dlia raĭonirovaniia lavinoopasnykh raĭonov SSSR po tipam lavinnogo rezhima],
Troshkina, E.S., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.122-125, 5 refs., In Russian with English summary.
Danilina, A.V., Andreev, IU.B., Svetlosanov, V.A.
Snow surveys, Mapping, Avalanche formation, Classifications, Avalanche forecasting.

42-1316
Methods of studying ice strength at ice crossings. [Metodika issledovaniia prochnosti l'da ledianykh pereprav],
Tiulina, T.IU., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.125-129, 5 refs., In Russian with English summary.
Ice crossings, Ice cover strength, Ice structure, Statistical analysis.

42-1317
Distribution of air inclusions in infiltration ice of Spitsbergen glaciers. [Raspredelenie vozdushnykh vkliucheniĭ v infil'tratsionnom l'du shpitsbergenskikh lednikov],
Samoĭlov, O.IU., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.130-134, 6 refs., In Russian with English summary.
Ice composition, Glacier ice, Ice structure, Impurities, Bubbles, Norway—Spitsbergen.

42-1318
Calculating the output component of the mass balance of a large glacier on West Spitsbergen Island. [Raschet raskhodnoĭ sostavliaiushcheĭ balansa massy krupnogo lednika na o. Zapadnyĭ Shpitsbergen],
Tareeva, A.M., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.135-137, 9 refs., In Russian with English summary.
Troitskiĭ, L.S.
Glacier ice, Ice melting, Glacier mass balance, Glacier alimentation, Glacier surveys, Norway—Spitsbergen.

42-1319
Water-ice balance of Spitsbergen glaciers in the 1983/84 balance year. [Vodno-ledovyĭ balans lednikov Shpitsbergena v 1983/84 balansovom godu],
Gus'kov, A.S., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.138-139, 2 refs., In Russian with English summary.
Troitskiĭ, L.S.
Mountain glaciers, Valleys, Glacier mass balance, Norway—Spitsbergen.

42-1320
North Koryak glaciers. [Severokoriakskie ledniki],
Sedov, R.V., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.139-146, 10 refs., In Russian with English summary.
Glacier surveys, Aerial surveys, Glacier ice, Glacial deposits, Moraines, USSR—Koryak.

42-1321
Statistical analysis of interrelations among basic characteristics of glaciers. [Statisticheskiĭ analiz vzaimozavisimosteĭ osnovnykh kharakteristik lednikov],
Smoliarova, N.A., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.146-150, 3 refs., In Russian with English summary.
Glaciology, Statistical analysis, Terminology, Computer applications.

42-1322
Systems of large fractures in the lower part of the Bol'shoy Azau glacier on Elbrus Mountain. [Sistemy krupnykh treshchin nizhneĭ chasti lednika Bol'shoĭ Azau na El'brusе],
Ivanov, A.I., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.150-152, 8 refs., In Russian with English summary.
Glacier ice, Ice structure, Fracturing, Glacier oscillation, USSR—Elbrus Mountain.

42-1323
Two types of intra-glacial water regime in the Bertil Glacier on Spitsbergen. [O dvukh tipakh rezhima vnutrilednikovykh vod lednika Bertil' na Shpitsbergene],
Gokhman, V.V., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.152-157, 13 refs., In Russian with English summary.
Glacial hydrology, Glacier ice, Ice (water storage), Unfrozen water content, Norway—Spitsbergen.

42-1324
Numerical modeling of snow melting. [Chislennoe modelirovanie kharakteristik snegotaianiia],
Zhidkov, V.A., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.157-160, In Russian. 1 ref., In Russian with English summary.
Motovilov, IU.G.
Mathematical models, Snow melting, Snow cover distribution, Ice surface, Glacier ice.

42-1325
Winter types, strength of snow cover and avalanche formation. [Tipy zim, prochnostnye kharakteristiki snezhnogo pokrova i lavinoobrazovaniia],
Volodicheva, N.A., et al, *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.160-164, 9 refs., In Russian with English summary.
Oleĭnikov, A.D., Samoĭlov, R.S., Khodakov, V.G.
Snow physics, Snow strength, Snow cover structure, Snow density, Snow depth, Avalanche formation.

42-1326
Avalanche ejection distance in the Kazakhstan Altai. [Dal'nost' vybrosa lavin v Kazakhstanskom Altae],
Blagoveshchenskiĭ, V.P., *Materialy glaitsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.165-168, 8 refs., In Russian with English summary.
Avalanche mechanics, Snow cover distribution, Avalanche deposits, Avalanche formation, Alpine landscapes, Avalanche triggering.

42-1327
Lacustrine ice in the Schirmacher and Unter-See ponds in Antarctica. [Ozernye l'dy v oazisakh Shirmakhera i Unter-zee v Antarktide],
Vtiurin, B.I., *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.169-173, 9 refs., In Russian with English summary.
Lake ice, Ice composition, Lakes, Ice structure, Antarctica—Schirmacher Ponds, Antarctica—Unter-See, Lake.
A great variety of lacustrine ice reflecting the differences in its origin and environmental conditions has been observed in the antarctic oases of Schirmacher and Unter-See, and their environments. The main causes of differences in the structure of lake ice are: its location, dimensions, the depth of lakes, wind regime, etc. The lake ice of the oases (intra-oasis, periglacial, epishelf) and of superglacial lakes occurring on the surface of ice sheets and on the Lazarev Ice Shelf, is investigated. The informative capacity of the structure of lake ice, revealing the nature of antarctic oasis and of the abutting areas is discussed. (Auth.)

42-1328
Icing of Pamir caves. [Obledenenie peshcher Pamira],
Mavliudov, B.R., *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.173-179, 6 refs., In Russian with English summary.
Karst, Mine shafts, Caves, Ice accretion, Ice sublimation, Icing.

42-1329
Role of ground ice in the development of thermal erosion. [Rol' podzemnykh l'dov v razvitii termoerozii],
Poznanin, V.L., *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.179-182, 8 refs., In Russian with English summary.
Permafrost structure, Permafrost thermal properties, Ice melting, Erosion, Gullies.

42-1330
Engineering and glaciological aspects of snow science. [Inzhenerno-gliatsiologicheskie aspekty snegovedeniia],
Samoilov, R.S., et al, *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.183-187, 14 refs., In Russian with English summary.
Khodakov, V.G.
Engineering geology, Glaciology, Snow physics, Human factors, Snow impurities, Snow retention, Trafficability.

42-1331
Lake-burst glacial mudflows and countermeasures in the northern Tien Shan mountains. [Proryvnye gliatsial'nye seli i bor'ba s nimi v gorakh Severnogo Tian'-Shania],
Popov, N.V., *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.188-193, 10 refs., In Russian with English summary.
Mudflows, Glacial hydrology, Glacial deposits, Moraines, Glacial lakes, Lake bursts.

42-1332
Seismic effect of blast waves on snow cover. [Seismicheskoe vozdeistvie vzryvnykh voln na snezhnuiu tolshchu],
Gerber, A.R., *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.193-196, 11 refs., In Russian with English summary.
Snow physics, Blasting, Wave propagation, Snow acoustics, Avalanche triggering.

42-1333
On the expediency of operating internally iced waterpipes at the Baykal Amur railroad. [O tselesoobraznosti raboty vodoprovodov v rezhime vnutritrubnogo obledeneniia na BAMe],
Terekhov, L.D., *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.196-200, 9 refs., In Russian with English summary.
Water supply, Water pipelines, Pipeline freezing, Ice accretion, Baykal Amur railroad, Water temperature, Permafrost distribution, Design.

42-1334
Annotated list of Soviet literature on glaciology for 1983. [Annotirovannyi spisok sovetskoi literatury po gliatsiologii za 1983 god],
Kotliakov, V.M., et al, *Materialy gliatsiologicheskikh issledovanii*, Jan. 1987, Vol.59, p.201-236, 607 refs., In Russian with English summary.
Chernovol', L.P., Voevodin, V.A.
Bibliographies, Glaciology.

42-1335
Design and operation of transmission lines and transformer stations at 110kV in relation to soiled insulation, hoarfrost and work on live equipment. [Erfahrungen auf dem Gebiet der Projektierung und des Betriebs von Übertragungsleitungen und Umspannwerken 110kV und höher unter den Bedingungen der Isolationsverschmutzung, des Rauhreifs und der Arbeiten unter Spannung],
Baumann, E., *Energietechnik*, July 1987, 37(7), p.264-266, In German.
Transmission lines, Power line icing, Electrical insulation.

42-1336
Frost-mound scars and the evolution of a Late Dryas environment (northern Netherlands).
Groot, T. de, et al, *Geologie en mijnbouw*, 1987, 66(3), p.239-250, 39 refs.
Cleveringa, P., Klijnstra, B.
Frost mounds, Seasonal freeze thaw, Thermokarst development, Cryogenic structures.

42-1337
Sediments of ice-dammed, self-draining Ape Lake, British Columbia.
Gilbert, R., et al, *Canadian journal of earth sciences*, Sep. 1987, 24(9), p.1735-1747, With French summary. 30 refs.
Desloges, J.R.
Glacial lakes, Ice dams, Lake bursts, Canada—British Columbia—Ape Lake.

42-1338
Albedo model for shallow prairie snow cover.
Gray, D.M., et al, *Canadian journal of earth sciences*, Sep. 1987, 24(9), p.1760-1768, With French summary. 17 refs.
Landine, P.G.
Albedo, Snow optics, Snow depth.

42-1339
Sedimentation in ice-dammed Hazard Lake, Yukon.
Liverman, D.G., *Canadian journal of earth sciences*, Sep. 1987, 24(9), p.1797-1806, With French summary. 20 refs.
Glacial lakes, Ice dams, Canada—Yukon Territory—Hazard Lake.

42-1340
Remote control methods and instruments for obtaining data on natural resources and environments. [Distantsionnye metody i apparatura polucheniia dannykh o prirodnykh resursakh Zemli i okruzhaiushchei srede],
Volkov, A.M., ed, *Gosudarstvennyi nauchno-issledovatel'skii tsentr izucheniia prirodnykh resursov. Trudy*, 1987, Vol.28, 160p., In Russian. For selected papers see 42-1341 and 42-1342. Refs. passim.
Tulinov, V.F., ed.
Snow surveys, Remote sensing, Spacecraft, Radiometry, Measuring instruments, Soil temperature, Surface temperature, Ice temperature, Air temperature, Accuracy.

42-1341
Economic effectiveness of using satellite data for mapping snow cover on winter crop fields. [Ob ekonomicheskoi effektivnosti ispol'zovaniia kosmicheskoi informatsii dlia kartirovaniia snezhnogo pokrova na poliakh ozimykh kul'tur],
D'iachenko, V.A., et al, *Gosudarstvennyi naucho-issledovatel'skii tsentr izucheniia prirodnykh resursov. Trudy*, 1987, Vol.28, p.37-44, In Russian. 10 refs.
Volkov, A.M.
Snow surveys, Remote sensing, Spacecraft, Soil temperature, Air temperature, Snow cover distribution.

42-1342
Methods and means of metrologic provisions for radiometric ultrahigh frequency measurements (a review). [Metody i sredstva metrologicheskogo obespecheniia radiometricheskikh SVCh-izmerenii (Obzor)],
Goncharov, A.K., *Gosudarstvennyi nauchno-issledovatel'skii tsentr izucheniia prirodnykh resursov. Trudy*, 1987, Vol.28, p.109-123, In Russian. 45 refs.
Radiometry, Surveying, Measuring instruments, Soil temperature, Surface temperature, Ice temperature, Air temperature, Accuracy.

42-1343
Biogenic and organic substances in ice in the Irtysh-Karaganda canal. [Biogennye i organicheskie veshchestva vo l'du kanala Irtysh-Karaganda],
Amirgaliev, N.A., et al, *Gidrokhimicheskie materialy*, 1986, Vol.96, p.61-69, In Russian. 12 refs.
Tarasov, M.N.
River ice, Ice composition, Water chemistry, Ice cover thickness, Soil pollution, Soil water migration.

42-1344
Hydrology of rivers and marine estuaries. [Gidrologiia rek i morskikh ust'ev],
Glubokov, V.N., ed, *Dal'nevostochnyi regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1987, Vol.130, 120p., In Russian. For selected papers see 42-1345 through 42-1348. Refs. passim.
Alpine tundra, Snow cover distribution, Icebound rivers, Spaceborne photography, Snow water equivalent, Permafrost beneath rivers, Flood forecasting, Ice cover thickness, Snow cover effect, Icebound lakes, Ice breakup, Ice conditions, Ice navigation.

42-1345
Calculation of basic water inflow into the Kolyma reservoir. [Raschet osnovnogo pritoka vody v Kolymskoe vodokhranilishche],
Mel'nikova, Z.D., et al, *Dal'nevostochnyi regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1987, Vol.130, p.13-20, In Russian. 3 refs.
IUrasova, N.N.
Permafrost beneath rivers, River flow, Seasonal variations, USSR—Kolyma River.

42-1346
Possibility of using satellite data on snow cover in forecasting spring floods. [O vozmozhnosti ispol'zovaniia informatsii o snezhnom pokrove s iskusstvennykh sputnikov Zemli dlia prognoza elementov vesennego polovod'ia],
Sidneva, L.P., *Dal'nevostochnyi regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1987, Vol.130, p.21-23, In Russian. 6 refs.
Snow cover distribution, Spaceborne photography, Hydrology, Snow water equivalent, Flood forecasting.

42-1347
Interdependence among some characteristics of ice regime in the Zeya reservoir and parameters of planetary atmospheric circulation. [O vzaimozavisimosti nekotorykh kharakteristik ledovogo rezhima Zeiskogo vodokhranilishcha i parametrov planetarnoi atmosfernoi tsirkuliatsii],
Lobovikova, Z.P., et al, *Dal'nevostochnyi regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1987, Vol.130, p.96-103, In Russian. 10 refs.
Semenenko, G.V.
Icebound lakes, Ice conditions, Ice breakup, Ice navigation, Ice forecasting, Synoptic meteorology.

42-1348
Ice melting processes in the Zeya reservoir. [Nekotorye osobennosti protsessa taianiia ledianogo pokrova na Zeiskom vodokhranilishche],
Semenenko, G.V., *Dal'nevostochnyi regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1987, Vol.130, p.104-106, In Russian. 3 refs.
Icebound lakes, Air temperature, Snow cover effect, Permafrost beneath lakes, Lake ice, Ice breakup, Ice melting, Ice navigation.

42-1349
Processes of relief formation in Siberia. [Protsessy formirovaniia rel'efa Sibiri],
Logachev, N.A., ed, Novosibirsk, Nauka, 1987, 185p. (Pertinent p.74-112), In Russian with abridged English table of contents enclosed. Refs. p.178-183.
Geomorphology, Slope processes, Rock streams, Geocryology, Hydrothermal processes, Thermokarst.

42-1350
Frost survival of plants: responses and adaptation to freezing stress.
Sakai, A., et al, Ecological studies, Vol.62, Berlin, Springer, 1987, 321p., Refs. p.267-304.
Larcher, W.
Plant tissues, Plant physiology, Acclimatization, Frost resistance, Cold weather survival, Damage, Snow cover effect, Ice cover effect, Temperature variations.

42-1351
Proceedings.
American Towing Tank Conference, 21st, Washington, D.C. Aug. 5-7, 1986, Washington, D.C. National Academy Press, 1987, 518p., Refs. passim. For selected papers see 42-1352 through 42-1356.
Messalle, R.P., ed.
Tanks (containers), Ice navigation, Ice models, Ice conditions, Meetings, Tests, Ice cover strength.

42-1352
Effect of ice-floe size on propeller torque in ship-model tests.
Tatinclaux, J.C., MP 2289, American Towing Tank Conference, 21st, Washington, D.C., Aug. 5-7, 1986. Proceedings. Edited by R.F. Messalle, Washington, D.C., National Academy Press, 1987, p.291-298, 4 refs.
Ice loads, Propellers, Ice navigation, Ice floes, Ice conditions, Ice solid interface, Velocity, Ice density, Friction, Tests.
Results of a laboratory study on ice-propeller interaction conducted with a model icebreaker are presented. The tests were made in ice-free water, precut channels with regularly shaped ice floes of different sizes, and brash-filled ice channels. The test results showed that the propeller torque and its standard deviation increased with both ice floe size and ship speed. The dominant frequency in the torque fluctuations was found to be either the propeller speed or the ratio of ship speed to floe width. The effect of ice ingestion on propeller thrust could not be determined because of malfunction of the thrust component of the propeller dynamometer. The results suggest that difference in ice density and in ice-hull friction coefficient between model tests and full scale trials may be at least partially responsible for the lack of agreement between torque and powering requirements predicted from model propulsion test results and those measured during full-scale trials.

42-1353
Comparison of USCG *Polar* class icebreaking patterns: full scale trials, physical model tests and analytical predictions.
Kotras, T., et al, American Towing Tank Conference, 21st, Washington, D.C., Aug. 5-7, 1986. Proceedings. Edited by R.F. Messalle, Washington, D.C., National Academy Press, 1987, p.299-305, 4 refs.
Humphreys, D Ettema, R., Free, A.
Icebreakers, Ice breaking, Ice cover strength, Ice navigation, Forecasting, Tests, Ice cover thickness.

42-1354
Strength indexer for model ice.
Baker, D.N., et al, American Towing Tank Conference, 21st, Washington, D.C., Aug. 5-7, 1986. Proceedings. Edited by R.F. Messalle, Washington, D.C., National Academy Press, 1987, p.307-313, 5 refs.
Timco, G.W., Nowicki, C.C.
Ice models, Ice mechanics, Design, Measuring instruments, Tests, Monitors, Ice cover thickness.

42-1355
Canada's new ice tank.
Jones, S.J., American Towing Tank Conference, 21st, Washington, D.C., Aug. 5-7, 1986. Proceedings. Edited by R.F. Messalle, Washington, D.C., National Academy Press, 1987, p.315-319, 4 refs.
Ice models, Tanks (containers), Ice sheets, Refrigeration.

42-1356
Modelling the broken channel.
Comfort, G., et al, American Towing Tank Conference, 21st, Washington, D.C., Aug. 5-7, 1986. Proceedings. Edited by R.F. Messalle, Washington, D.C., National Academy Press, 1987, p.321-327, 6 refs.
Glen, I.F., Keinonen, A., Grinstead, J.
Ice breaking, Ice composition, Ice navigation, Ice cover thickness, Doped ice, Models, Tests, Channels (waterways), Flexural strength, Ice elasticity, Velocity, Ice conditions.

42-1357
Investigation of the atmospheric boundary layer over the Arctic Ocean using SODAR.
De Rougé, E., Monterey, Ca. Naval Postgraduate School, Sep. 1985, 79p., ADA-161 057, M.S. thesis. 16 refs.
Sound waves, Air temperature, Boundary layer, Ice edge, Ice conditions, Temperature gradients, Heat flux, Backscattering, Refraction, Arctic Ocean.

42-1358
Extension of the ice scour population model to accommodate crosscutting.
Geonautics Limited, Geonautics Ltd., file ref. 839-84G, June 1986, 19p. + appends., 6 refs.
Ice scoring, Icebergs, Ocean bottom, Sea ice, Models, Bottom topography, Computer applications.

42-1359
Determination of trace elements in Wuxi fallen ice by INAA.
Mao, X., et al, *Journal of radioanalytical and nuclear chemistry. Articles*, Sep. 1987, 114(2), p.345-349, 9 refs.
Ice composition, Neutron activation analysis, Extraterrestrial ice, China—Wuxi.

42-1360
Development of a methodology for the design of an offshore oil production platform on the Alaskan Arctic Ocean continental shelf.
Sakhuja, S., Berkeley, University of California, 1986, 503p., University Microfilms order No.DA8624683, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Jan. 1987, p.3034.
Offshore structures, Ice pressure, Shear stress, Beaufort Sea.

42-1361
Topics in nonlinear filtering and detection.
Dyson, T., Princeton, Princeton University, 1986, 138p., University Microfilms order No.DA8629450, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Mar. 1987, p.3896.
Underwater acoustics, Subglacial observations, Ice acoustics.

42-1362
Photoelastic properties of ice single-crystals.
Yuen, C.Y., Milwaukee, University of Wisconsin, 1986, 112p., University Microfilms order No.-DA8629985, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Mar. 1987, p.3936.
Ice crystal optics, Ice deformation, Orientation.

42-1363
Remote sensing of whole-field flow rates of glaciers and other large bodies using interferometric methods.
Conley, E.G., East Lansing, Michigan State University, 1986, 176p., University Microfilms order No.-DA8700451, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Mar. 1987, p.3844.
Glacier flow, Remote sensing, Photointerpretation.

42-1364
Water flow at the base of a surging glacier.
Brugman, M.M., Pasadena, California Institute of Technology, 1987, 280p., University Microfilms order No.DA8702483, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Apr. 1987, p.4099-4100.
Glacial hydrology, Glacier surges, United States—Alaska—Variegated Glacier.

42-1365
Experimental and theoretical investigation of an air injection type anti-icing system for aircraft.
Tabrizi, A.H., Knoxville, University of Tennessee, 1986, 299p., University Microfilms order No.-DA8701826, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Apr. 1987, p.4278.
Ice prevention, Aircraft icing.

42-1366
Basal hydrology of a surge-type glacier: observations and theory relating to Variegated Glacier.
Humphrey, N.F., Seattle, University of Washington, 1987, 227p., University Microfilms order No.-DA8713370, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Sep. 1987, p.685.
Glacial hydrology, Glacier surges, United States—Alaska—Variegated Glacier.

42-1367
Numerical models of sea ice-ocean interaction in the marginal ice zone.
Steele, M., Princeton, Princeton University, 1987, 213p., University Microfilms order No.DA8713021, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Sep. 1987, p.689.
Ice edge, Ice water interface, Sea ice, Ice melting, Sea water freezing, Mathematical models.

42-1368
Study of punching shear in Arctic offshore structures.
McLean, D.I., Ithaca, Cornell University, 1987, 312p., University Microfilms order No.DA8708984, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Oct. 1987, p.1113.
Offshore structures, Shear properties.

42-1369
Role of acid phosphatases in the phosphorus nutrition of arctic tundra plants.
Kroehler, C.J., Blacksburg, Virginia Polytechnic Institute, 1987, 153p., University Microfilms order No.-DA8719021, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Nov. 1987, p.1230.
Plant physiology, Tundra.

42-1370
1980-1981 large-scale ice strength tests: laboratory uniaxial compression tests. Vol.1 and Vol.2 (Pts.1 and 2).
Petrie, D.H., et al, *Exxon Production Research Company. Production Research report*, June 1983, EPR.21PR.83, 2 vols., 7 refs.
Poplin, J.P.
Ice cover strength, Ice cover thickness, Ice crystal structure, Compressive properties, Strains, Ice salinity, Grain size, Time factor, Photography, Ice sheets, Tests.

42-1371
1978/79 conical structure test program, AOGA project 61.
Wood, K.N., ESSO Resources Canada Limited, Research Dept., May 1980, 177p. + appends., 5 refs.
Ice mechanics, Offshore structures, Ice loads, Pressure ridges, Shear strength, Tests, Ice conditions, Ice elasticity, Friction.

42-1372
Perspectives in ice technology.
Ashton, G.D., MP 2288, [1986], 4p., Keynote address delivered at the International Conference on Ice Technology, MIT, June 10-12, 1986. (Unpublished manuscript.).
Ice physics, Research projects, Engineering, Icing, Ice cover.

42-1373
Ice movement in Canadian coastal waters.
Markham, W.E., *Canada. Marine Science Directorate. Fisheries and Marine Service. Miscellaneous report series*, 1977, Vol.43, p.249-253.
Ice mechanics, Icebergs, Sea ice, Ocean currents, Ice floes, Ice forecasting, Drift, Wind factors, Temperature effects, Remote sensing, Beaufort Sea.

42-1374
Beaufort Sea box model of ice.
Barber, F.G., et al, *Canada. Marine Science Directorate. Fisheries and Marine Service. Miscellaneous report series*, 1977, Vol.43, p.255-258, 9 refs.
Duck, J., Markham, W.E., Murty, T.S.
Ice models, Ice mechanics, Sea ice, Runoff, Water transport, Oil spills, Beaufort Sea.

42-1375
Confidence in heat flux transducer measurements of buildings.
Flanders, S.N., *ASHRAE transactions*, 1985, 91(1), MP 2290, p.515-531, 12 refs.
Heat transfer, Buildings, Heat flux, Temperature measurement, Measuring instruments.
Confidence in the validity of heat flux transducer (HFT) measurements is sufficiently high that ASTM is preparing a standard practice for the use of HFTs on buildings. A key issue the standard practice will address is how to adjust the calibration of the HFT to the thermal environment of the measurement. Confidence in the use of HFTs is based in part on a propagation of error analysis of key thermal influences on the accuracy of measurement. The user can expect the HFT to render a standard deviation of 10% of the heat flux measured. Field measurements confirm this expectation. However, the variety of heat flux mechanisms inherent in building construction requires that the investigator choose the measuring situation carefully. Convection, even in "fully insulated" spaces, can cause unexpected lateral heat flux and results that are difficult to interpret. More work should be done with HFTs to investigate convection in walls and attics, as well as to investigate other lateral heat flux transfer mechanisms.

42-1376
Low temperature fracture behaviour and AE characteristics of autoclaved aerated concrete (AAC).
Jeong, H.D., et al, *Cement and concrete research*, Sep. 1987, 17(5), p.743-754, 7 refs.
Takahashi, H., Teramura, S.
Concrete freezing, Concrete durability, Cold weather construction, Water content, Temperature effects, Freeze thaw cycles, Damage, Porosity.

42-1377
Chlorite: a deleterious constituent with respect to freeze thaw durability of concrete aggregates.
Higgs, N.B., *Cement and concrete research*, Sep. 1987, 17(5), p.793-804, 4 refs.
Concrete durability, Freeze thaw cycles, Concrete aggregates, Concrete freezing, Chemical analysis, Models.

42-1378
Note on apparent effect of vibration on ice friction.
Kitagawa, H., *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum*, July 1986, LM-AVR-05, 6p.
Ice friction, Vibration, Ice navigation, Ships, Analysis (mathematics), Ice solid interface.

42-1379
Friction measurements on the ITTC friction plate.
Kitagawa, H., *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Nov. 1986, LM-AVR-06, 6p. + figs., 5 refs.
Ice friction, Ice navigation, Ships, Ice solid interface, Coatings, Surface properties, Tests, Analysis (mathematics).

42-1380
Some tests at the Institute for Marine Dynamics on high speed hovercraft icebreaking.
Whitten, J., et al, *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Nov. 1986, LM-AVR-07, 7p. + figs., Presented at the 1986 CACTS International Conference on Air Cushion Technology, Toronto, Ontario, Sep. 1986. 10 refs.
Icebreakers, Air cushion vehicles, Ice breaking, Tests, Velocity, Wave propagation.

42-1381
Note on the rate of growth of the ice cover thickness in the ice tank.
Kitagawa, H., *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Nov. 1986, LM-AVR-08, 11p. + figs., 9 refs.
Ice growth, Ice cover thickness, Heat transfer, Tanks (containers), Time factor, Stefan problem, Analysis (mathematics).

42-1382
Indentation problem in ship-ice interaction.
Munaswamy, K., et al, *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Nov. 1986, LM-AVR-09, 103p., 24 refs.
Jebaraj, C., Swamidas, A.S.J.
Icebreakers, Ice loads, Ice solid interface, Ice navigation, Ice breaking, Ice strength, Models, Tests, Ice cover thickness, Analysis (mathematics).

42-1383
Ship research in Japan.
Kitagawa, H., *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Nov. 1986, LM-AVR-10, 8p. + figs., Presented at the Meeting of SNAME Canadian Atlantic Section at St. John's, Newfoundland, Nov. 19, 1986.
Icebreakers, Ships, Design, Strength, Japan.

42-1384
Proceedings (abstracts, selected).
Chinese National Conference on Permafrost, 3rd, Harbin, China, Aug. 18-24, 1986, [1986], 106p., Chinese version also available.
Permafrost, Geocryology, Frozen ground physics, Periglacial processes, Engineering, Altiplanation, Meetings, Instruments, Design, Tests.

42-1385
Pressure dependent molecular motion in ice.
Chezeau, J.M., et al, International Meeting of the Société Française de Chimie, Division de Chimie physique, 41st, Grenoble, France, June 30-July 4, 1986. Proceedings. Edited by J. Lascombe. Dynamics of molecular crystals, Studies in physics and theoretical chemistry, No.46, Amsterdam, Elsevier, 1987, p.491-495, 24 refs.
McGuigan, S., Strange, J.H.
Ice physics, Molecular energy levels, Self diffusion, Ice crystals, Pressure, Temperature effects.

42-1386
Interannual variations in Southern Hemisphere sea ice-cyclone interactions.
Carleton, A.M., Biologo-okeanograficheskie issledovaniia tikhookeanskogo sektora Antarktiki (Biological and oceanographic investigations of the Pacific sector of the antarctic ocean). Edited by P.P. Makarov, Boston, American Meteorological Society, 1983, p.241-244, 11 refs.
Periodic variations, Sea ice distribution.
The author examines the link between interannual variations in the latitudinal extent of southern ocean sea ice and the synoptic-scale (cyclonic) atmospheric circulation of the Southern Hemisphere during the five winter-growth periods (June through Sep.) of 1973-77. Strong variations characterize both parameters for this period. The study also verifies the strongly regional dependence of ice-cyclone interactions in the circumpolar trough. These appear strongest in the Ross Sea, but are still of importance in East Antarctica. Cyclonic activity is secondary to ice distribution and its interannual variability in the Weddell Sea. (Auth.)

42-1387
Proceedings.
International Conference on Southern Hemisphere Meteorology, 2nd, Wellington, New Zealand, Dec. 1986, Boston, American Meteorological Society, 1986, 482p., For individual papers see 42-1388 through 42-1396 or F-36671, I-36660 through I-36670 and I-36672 through I-36678.
Meteorology, Sea ice.
The Conference, which was held in Dec. 1986 in Wellington, New Zealand, received responses from scientists in 17 different countries. They submitted more than 150 papers of which 120, in extended abstract form, are included in this volume along with short abstracts of 12 others. Weather analysis and forecasting is one highlighted topic; a new emphasis on Tropical Oceans Global Atmosphere (TOGA) is also strongly featured with sessions on El Nino-Southern Oscillation and tropical meteorology. Twenty of the papers have significant application to Antarctica. These discuss, among others, such topics as sea ice, simulation of antarctic climate, katabatic and upper level winds, automatic weather stations, the meteorology of besetment, laser cloud studies, and atmospheric ozone.

42-1388
Southern Hemisphere circulation of atmosphere ocean and sea ice.
Budd, W.F., International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.101-106, 16 refs.
Atmospheric circulation, Ocean currents, Sea ice.
A major feature of the Southern Hemisphere atmospheric circulation is the strong concentration of centers of low pressure systems in the region from 40 to 70S around the edge of the antarctic continent and sea ice zone. Results of a 5 year study of the mean climatology of cyclogenesis in the Southern Hemisphere were reported earlier. This study has since been extended to each month of a 10 year period. This extended data set now provides a basis for describing the mean climatology of the annual cycle of cyclogenesis, cyclone tracks and cyclolysis as well as the interannual variability. (Auth.)

42-1389
Circulation changes induced by the removal of antarctic sea ice in a July general circulation model.
Simmonds, I., et al, International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.107-110, 8 refs.
Dix, M.
Sea ice, Atmospheric circulation, Models.
While a number of general circulation model studies have been performed with high latitude forcing by prescribed sea ice and sea surface temperature anomalies in the Northern Hemisphere (NH) few have been carried out for the Southern Hemisphere (SH). There are several reasons for believing that the responses there could be rather different from those produced in the NH (SH sea ice is more zonally-symmetric, the circulation regime is very different, etc.). A large sea ice anomaly was imposed on a model of Sep. climate in the SH. In this paper experiments are reported which extend the work using an improved model. An assessment is made of the remote and local response of a modal atmosphere to large- and regional scale sea ice forcing in the SH. (Auth.)

42-1390
Katabatic drainage flows over Antarctica and the polar vortex.
James, I.N., International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.117-118, 4 refs.
Wind (meteorology), Ice sheets, Topographic features.
The spectacular and persistent katabatic winds over the antarctic continent have been studied by several authors and the strength and orientation of the surface wind relative to the orography of the ice sheet are now reasonably well understood. The persistent outflow of surface air from the continent must, in the long time mean, be balanced by inflow aloft. In turn, this general convergence in the middle troposphere will generate cyclonic vorticity over the continent. Three questions arise and are addressed: is the vorticity generated by this process comparable to that resulting via thermal wind balance from surface temperature contrasts between ice and ocean? What vertical structure and, in particular, what depth will the return circulation have? Can a relationship between the ice sheet topography and the upper level vorticity be outlined? (Auth.)

42-1391
Application of automatic weather station data to the study of katabatic flow in East Antarctica.
Van Meurs, B., et al, International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.119-122, 8 refs.
Allison, I.
Weather stations, Wind (meteorology), Measuring instruments, Antarctica—East Antarctica.
Parameters measured by the automatic weather stations deployed by ANARE include air pressure, wind speed and direction 4 m above the surface, air temperatures at 1, 2 and 4 m above the surface, and snow temperature. One AWS operated continuously from Jan. 1982 to May 1984 at a site about 130 km inland from Mawson Station, at an elevation of 1850 m on the relatively steep edge of the ice sheet where katabatic flow is dominant. Two years of data from this station were analyzed to show the annual and diurnal variation of wind and temperature at this site and gain some insight into the inversion strength and the strength of the katabatic flow. The analysis carried out was based on the assumption of zero potential temperature gradient along the ice slope and the validity of this is discussed. The results are presented on a seasonal basis determined from additional data from a solar cell on the station which indicated that the year could be conveniently divided into 4 seasons on the basis of the duration and intensity of solar radiation. (Auth. mod.)

42-1392
Weather and climate in the vicinity of Ross Island, Antarctica.
Savage, M.L., et al, International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.123-126, 2 refs.
Stearns, C.R.
Wind direction, Topographic effects, Climate, Ice shelves, Antarctica—Ross Ice Shelf.
Remarkably persistent southerly surface winds occur over the northwestern Ross Ice Shelf. On the climatic scale, the persistent drainage of cold air from the antarctic interior to lower latitudes may generate sufficient baroclinity at the interface between the Ross Ice Shelf and the Transantarctic Mountains to produce mountain-parallel flow at the surface. This is the barrier wind explanation introduced in 1970. The analyses presented here support this theory, and indicate that even in the case of cyclones impinging upon the region, the influence of topography is sufficient to distort the low level circulations into prematurely initiating and sustaining strong southerly winds. (Auth.)

42-1393
Meteorological factors associated with the besetment of the M.V. *Nella Dan* off the antarctic coast, October 1985.
Wilson, J.C., International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.127-129, 3 refs.
Ice navigation, Meteorological factors, Ships.
After discussing generally methods of navigation and ship operations in ice and the several problems hindering or halting these endeavors, the meteorological events leading to the besetment of MV *Nella Dan* are reviewed. The interactions of the long wave near *Nella Dan*, wave action in the sea, sea water and air temperature, and time spans in which these factors operated are discussed.

42-1394
Cloud studies at Syowa Station in East Antarctica by means of laser-radar.
Wada, M., et al, International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.134-137, 12 refs.
Iwasaka, Y.
Clouds (meteorology), Lasers, Backscattering, Ice crystals, Antarctica—Showa Station.
The studies seek to identify characteristic features of antarctic clouds and to understand the relationships between ice crystals and supercooled water droplets in the clouds. The lidar measuring system is described and light components used in the measurements are defined. Temperatures at the top and bottom of cloud echoes are used to calculate integrated backscatter.

42-1395
Large-scale short-period sea ice atmosphere interaction.
Cahalan, R.F., et al, International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.141-144, 22 refs.
Chiu, L.S.
Sea ice, Ice edge, Ice air interface.
The purpose of this paper is to show that synoptic-scale ice fluctuations occur in the region of the sea ice margin, and that their wavenumbers and advection speeds suggest a rapid response to synoptic-scale forcing by the atmosphere. High-frequency synoptic-scale sea ice fluctuations are significant not only because they provide direct evidence of the link with atmospheric variations occurring on the same space and time scales, but also because they represent the primary background of "climatic noise" from which any true "climatic signal" must be extracted. In the next section the available data is described. Section 3 describes a difference filter that isolates the high frequency variations, and focuses on one case study of possible sea ice-atmosphere interaction. Section 4 summarizes major results, discusses the climatological significance of such sea ice fluctuations, and suggests possible future work in sea ice modeling. (Auth.)

42-1396
Antarctic sea ice—atmosphere signal of the southern oscillation.
Carleton, A.M., International Conference on Southern Hemisphere Meteorology, 2nd. Proceedings, Boston, American Meteorological Society, 1986, p.431-434, 17 refs.
Sea ice, Climatic changes, Antarctica—Weddell Sea.
Interactions between the extreme phases of the Southern Oscillation (SO) and antarctic sea ice parameters (e.g. concentration) at the regional scale have heretofore not been investigated. This paper presents the results of such an analysis for summer ice in the Weddell Sea/South Atlantic for SO events in the period 1929-62. They indicate the presence of an SO signal in the sea ice that arises from antecedent (springtime) anomalies in the sign and magnitude of the meridional component of the surface wind over the southwest Atlantic. (Auth.)

42-1397
Resistance tests in simplified model ridges.
Kitagawa, H., et al, *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Dec. 1986, LM-AVR-11, 7p. + figs., Presented at the 46th Meeting of the Ship Research Institute, Dec. 1985.
Ice navigation, Ice breaking, Pressure ridges, Ice models, Ice strength, Tests, Tanks (containers).

42-1398
Time constant of self-propulsion tests in ice.
Kitagawa, H., *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Dec. 1986, LM-AVR-13, 13p. + figs., 2 refs.
Ice navigation, Icebreakers, Ice solid interface, Tests, Analysis (mathematics), Models, Propellers, Ships.

42-1399
Study on ship performance in ice-covered waters (1st report)—effect of parallel body.
Kitagawa, H., et al, *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Dec. 1986, LM-AVR-14, 4p. + figs., Presented at the 40th Meetings of the Ship Research Institute, Dec. 1982.
Ice navigation, Ice conditions, Velocity, Models, Tests, Propellers.

42-1400
Small ice tank tests to investigate the effect of bacteria on EGADS ice.
Hill, B., et al, *National Research Council, Canada. Institute for Marine Dynamics. Laboratory memorandum,* Mar. 1987, LM-AVR-15, 5 refs.
Parsons, B.
Ice strength, Bacteria, Ice models, Freezing, Tanks (containers), Mechanical properties.

42-1401
Effect of surface friction on ship model resistance in level ice.
Williams, F.M., et al, *National Research Council, Canada. Institute for Marine Dynamics. Test report,* Apr. 1987, TR-AVR-02, 10p. + figs., 15 refs.
Snellen, J.B., Bell, J.M.
Ice friction, Ice navigation, Ships, Ice strength, Ice solid interface, Models, Tests, Ice conditions, Surface roughness.

42-1402
Tests in ice of a 1:8 scale model of the CCG R-class hull.
Colbourne, B., *National Research Council, Canada. Institute for Marine Dynamics. Test report,* June 1987, TR-AVR-07, 10p. + figs.
Ice navigation, Ice strength, Ice cover thickness, Ships, Ice friction, Tests, Models, Velocity.

42-1403
Proceedings, Vol.1.
Snow Symposium, 6th, Hanover, NH, Aug. 12-14, 1986, *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1987, SR 87-12, 207p., ADB-115 486, Refs. passim. For individual papers see 42-1404 through 42-1422.
Snow physics, Snowfall, Snow cover effect, Infrared radiation, Meetings, Visibility, Light transmission, Sound waves, Light scattering, Radar echoes.

42-1404
Preview of the SNOW-III West data base.
Lacombe, J., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2291, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.3-11, ADB-115 486, 5 refs.
Snow physics, Military operation, Light transmission, Infrared reconnaissance, Visibility, Meteorological factors, Detection, Snowfall, Precipitation gages.
Reduction of data recorded at the SNOW-III West field experiment is complete and a summary report is now being written. A preview of the organization and contents of the upcoming report is given in this paper.

42-1405
Scavenging of infrared screener EA 5763 by falling snow.
Cragin, J.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2292, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.13-20, ADB-115 486, 4 refs.
Hewitt, A.D.
Snowfall, Infrared radiation, Light scattering, Snow crystals, Aerosols, Visibility, Ice crystals, Precipitation (meteorology), Wind velocity, Tests, Cloud dissipation.
Field tests conducted with EA 5763 in Hanover, NH, Hollis, ME and E. Corinth, VT show that an order of magnitude more screener is removed and deposited at the surface within 30 m downwind during snowfall than under clear-air conditions. Relative amounts of screener deposited by diffusion/gravitation under clear conditions were inversely proportional to the wind speed above a threshold value of about 1 m/s. A direct linear relationship exists between the mass precipitation rate and the fraction of smoke cloud scavenged by stellar, spatial dendritic, and clustered snow crystals. The scavenging efficiency does not appear to depend strongly on snow or ice crystal type although scatter in the data and the limited number (6) of tests may have masked any relationship. Snow is four to five times more efficient than raindrops in scavenging EA 5763 from smoke clouds.

42-1406
Arctic/winter camouflage pattern.
Atkinson, H.R., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.21-33. ADB-115 486.
Military operation, Snow cover effect, Vegetation factors, Snowfall, Tests, Military transportation, Vehicles.

42-1407
Humidity and temperature measurements obtained from an unmanned aerial vehicle.
Ballard, H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2293, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.35-45, ADB-115 486, 1 ref.
Izquierdo, M., McDonald, C., Smith, J., Cogan, J., Tibuni, F., Greeley, H.
Meteorological instruments, Air temperature, Humidity, Airplanes, Measuring instruments, Tests, Temperature effects, Accuracy.
A small, lightweight, low power consuming instrument designed to measure atmospheric temperature and relative humidity from an unmanned aerial vehicle (UAV) was flight tested. The measurements obtained from the UAV instrument were compared with those obtained from balloon borne instruments. The balloons were launched prior to and just after the UAV flights. Although the measurement accuracy of the UAV instrument could not be established during these tests, the temperature and relative humidity variations noted were consistent with those obtained from the balloon instruments. The temperature variations conformed to the expected lapse rates. Laboratory tests on the performance of the instrument package under varying, particularly cold, temperatures were conducted to determine the environmental effects on instrument sensitivity, accuracy and time constants. Results of these tests are presented.

42-1408
Acoustic-to-seismic coupling through a snow layer.
Peck, L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2294, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.47-55. ADB-115 486.
Acoustics, Snow cover effect, Seismology, Sound waves, Soil mechanics, Military operation, Frost penetration, Experimentation.
The excitation of ground motion by airborne sound is termed acoustic-to-seismic coupling. The occurrence of acoustic-to-seismic coupling degrades the performance of a seismic sensor unless its contribution to the ground motion is compensated for, while it is the basis of aircraft detection and ranging by means of an acoustic/seismic sensor. The variation in acoustic-to-seismic coupling due to the winter environment must be known and understood so that the effects of the winter environment can be incorporated in the design and employment of sensor systems.

42-1409
Snow-smoke synergism data review.
Farmer, W.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.59-67, ADB-115 486, 1 ref.
Stallings, E., Gerard, S., Burlbaw, E.J.
Snowfall, Smoke generators, Snowflakes, Visibility, Snow cover effect, Attenuation, Transmission, Temperature effects.

42-1410
SMART transmission support at SNOW IV.
Hanley, S.T., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.69-80, ADB-115 486, 3 refs.
Light transmission, Snowstorms, Snow optics, Optical properties, Spectra.

42-1411
Forward scatter meter for measuring extinction in adverse weather.
Koh, G., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2295, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.81-84, ADB-115 486, 2 refs.
Attenuation, Light scattering, Radiation, Snowfall, Light transmission, Measuring instruments, Rain, Fog.
The extinction coefficient is a measure of the attenuation of radiation as it propagates through the atmosphere. Techniques for measuring the extinction coefficient in optical wavelength regions are of interest, since many military devices detect visible and infrared radiation emitted or reflected by distant targets. Experimental results comparing extinction coefficients measured with a forward scatter meter and a transmissometer show that it is feasible to use a forward scatter meter to measure extinction in winter precipitation (snow, rain and fog).

42-1412
Effect of transmissometer beam geometry on snow transmittance measurements.
Hutt, D.L., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.85-93, ADB-115 486, 6 refs.
Bissonnette, L.R.
Light transmission, Snow optics, Light scattering, Snowfall, Measuring instruments, Lasers, Models, Snowstorms, Snow crystal structure.

42-1413
Extinction and scattering due to falling snow: a preliminary report.
Koenig, G.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.95-108, ADB-115 486, 4 refs.
Trowbridge, C.
Snow optics, Light scattering, Light transmission, Snowfall, Spectra, Measuring instruments, Lasers.

42-1414
Slant path extinction and visibility measurements from an unmanned aerial vehicle.
Cogan, J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2296, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.115-126, ADB-115 486, 5 refs.
Greeley, H., Izquierdo, M., McDonald, C., Smith, J.
Infrared radiation, Visibility, Light transmission, Cloud cover, Temperature effects, Sounding, Computer applications.
The potential for using measurements of infrared radiation from the Earth's surface in the wavelength range of 8-14 micron to obtain an estimate of infrared extinction is examined. The system depends on the reduction of detected radiation with increasing distance from the observed objects. The effects of cloud cover and the temperature and emissivity dependence are considered. Limitations on the operational range are presented. This paper also presents a technique using a video image and computer processing to obtain a measure of visual range from the observed contrast differences in the image. A prior knowledge of scene contrast when visibility is known can be compared with the scene contrast obtained under arbitrary conditions to estimate visibility. A slightly different approach to obtain visual range views horizon and terrain simultaneously. A contrast measurement can then be used to determine visual range if the distance to the horizon is known.

42-1415
Effect of instrument configuration on measurement of transmittance in snow.
Winchester, L.W., Jr., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.127-131, ADB-115 486, 8 refs.
Snow optics, Light scattering, Electromagnetic properties, Radiation, Light transmission, Analysis (mathematics), Snow crystal.

42-1416
Wet precipitation in subfreezing air below a cloud influences radar backscattering.
Colbeck, S.C., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, MP 2297, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.135-144, ADB-115 486, 8 refs.
Ice crystal growth, Supercooled clouds, Radar echoes, Analysis (mathematics), Backscattering, Temperature effects, Precipitation (meteorology), Unfrozen water content.
Ice particles falling through supercooled clouds accrete water droplets fast enough to incur a substantial temperature increase. During conditions of "just wet" growth of fair size graupel particles, the temperature rise can reach several degrees. These wet ice particles would take hundreds of meters to refreeze after falling below the cloud. Thus wet ice particles can fall through subfreezing air below a supercooled cloud and enhance radar backscattering. While this effect is possible with clouds, the liquid content of fogs is too low to produce more than a few tenths of a degree rise in the temperature of falling ice particles. Furthermore, only cumulus clouds have a sufficient liquid water content to give a 3 degree temperature rise.

42-1417
Pulse airborne millimeter wave measurements of snow-covered ground.
Bradley, G.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.145-158, ADB-115 486, 2 refs.
Currie, N.C., Trostel, J.M., Greneker, E.F.
Airborne radar, Radar echoes, Snow cover effect, Snow physics, Wave propagation, Reflectivity, Measuring instruments.

42-1418
Measurements on the reflectivity of snow-covered terrain at 94 GHz.
Baars, E.P., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.159-171, ADB-115 486, 5 refs.
Essen, H.
Reflectivity, Snow cover effect, Radar echoes, Backscattering, Measuring instruments.

42-1419
Millimetric radar backscatter trials: I. an overview.
Gallagher, J.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.175-177, ADB-115 486, 2 refs.
Backscattering, Radar echoes, Snow cover effect, Airborne radar, Wave propagation.

42-1420
Millimetric radar backscatter trials: II. results at 93 GHz.
Gallagher, J.G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.179-187, ADB-115 486.
Saunders, T.H., Dick, A.E., Bartlett, L.H.
Radar echoes, Backscattering, Snow cover effect, Wave propagation.

42-1421
Millimetric radar backscatter trials: III. results at 80 GHz.
Crisp, G.N., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.189-197, ADB-115 486, 1 ref.
Gasking, M.G., Potter, K.E.
Radar echoes, Snow cover effect, Backscattering, Snow water content, Unfrozen water content.

42-1422
Millimetric radar backscatter trials: surface snow properties and their relation to backscatter.
Williams, L.D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* July 1987, SR 87-12, Snow Symposium, 6th, Hanover, NH, Aug. 1986. Proceedings, p.199-207, ADB-115 486, 10 refs.
Sugden, D.E., Birnie, R.V.
Snow cover effect, Snow water content, Radar echoes, Backscattering, Snow optics, Snow surface, Porosity, Surface properties, Unfrozen water content.

42-1423
Seasonal current variations observed in western Hudson Bay.
Prinsenberg, S.J., *Journal of geophysical research,* Sep. 15, 1987, 92(C10), p.10,756-10,766, 38 refs.
Sea ice, Ice cover effect, Tidal currents, Ocean currents, Canada—Hudson Bay.

42-1424
Interpretation of the Icelandic sea ice record.
Kelly, P.M., et al, *Journal of geophysical research,* Sep. 15, 1987, 92(C10), p.10,835-10,843, 43 refs.
Goodess, C.M., Cherry, B.S.G.
Sea ice distribution, Ocean currents, Climate, Iceland.

42-1425
Ice conditions in the Greenland waters, 1980.
Fabricius, J.S., *Denmark. Meteorologisk institut. Report,* 1986, REPT-551.467.3.068(988), 167p. N87-17428/O/XAB.
Sea ice distribution, Ice conditions, Remote sensing, Charts, Topographic features, Aerial surveys, Snow cover distribution, Mapping, Permafrost, Shores, Greenland Sea.

42-1426
Soil genesis associated with periglacial ice wedge casts, southcentral Wyoming.
Munn, L.C., *Soil science,* Jul.-Aug. 1987, 51(4), p.1000-1004, 24 refs.
Ice wedges, Soil formation.

42-1427
Soil temperature profiles of two Alaskan soils.
Ping, C.L., *Soil science,* Jul.-Aug. 1987, 51(4), p.1010-1018, 35 refs.
Soil temperature, Snow cover effect, Vegetation factors, United States—Alaska—Fairbanks, United States—Alaska—Palmer.

42-1428
Seasonal variations of sea ice motion in the Canada Basin and their implications.
McLaren, A.S., et al, *Geophysical research letters,* Nov. 1987, 14(11), p.1123-1126, 25 refs.
Serreze, M.C., Barry, R.G.
Sea ice, Seasonal variations, Drift, Ocean currents.

42-1429
Depositional model for outwash, sediment sources, and hydrologic characteristics, Malaspina Glacier, Alaska: a modern analog of the southeastern margin of the Laurentide Ice Sheet.
Gustavson, T.C., et al, *Geological Society of America. Bulletin,* Aug. 1987, 99(2), p.187-200, 83 refs.
Boothroyd, J.C.
Glacier ablation, Glacial deposits, Meltwater, Sediments, Models, United States—Alaska—Malaspina Glacier.

42-1430
Dams built of coarse materials with ice cores. [Damba iz krupnoskeletnogo materiala s ledianym iadrom],
Aleksandrov, IU.A., et al, *Energeticheskoe stroitel'stvo,* Sep. 1987, No.9, p.11-13, In Russian. 3 refs.
Petkhel', IU.V.
Earth dams, Rock fills, Earth fills, Construction materials, Wastes, Embankments, Artificial ice, Permafrost beneath structures.

42-1431
Shore-junctions of earth dams built in the northern construction-climatic zone. [Beregovye sopriazheniia gruntovykh plotin sooruzhaemykh v severnoĭ stroitel'no-klimaticheskoĭ zone],
Belan, V.I., *Energeticheskoe stroitel'stvo,* Sep. 1987, No.9, p.13-15, In Russian.
Earth dams, Shores, Joints (junctions), Permafrost beneath structures, Permafrost bases, Design.

42-1432
Estimating construction strategies for power line objects in petroleum fields of western Siberia. [Otsenka strategii stroitel'stva elektrosetevykh ob"ektov dlia neftianykh mestorozhdeniĭ Zapadnoĭ Sibiri],
Sushkov, V.V., et al, *Energeticheskoe stroitel'stvo,* Sep. 1987, No.9, p.27-29, In Russian. 2 refs.
Parkhomenko, I.G.
Crude oil, Natural gas, Industrial buildings, Petroleum transportation, Pipelines, Electric power, Permafrost beneath structures, Economic analysis.

42-1433
Frost resistance of high-strength steam-cured concretes. [Morozostoĭkost' vysokoprochnykh proparennykh betonov],
Samarin, IU.A., et al, *Energeticheskoe stroitel'stvo,* Sep. 1987, No.9, p.68-71, In Russian. 6 refs.
Orlov, M.T., Stopich, S.I.
Winter concreting, Cements, Prefabrication, Concrete admixtures, Frost resistance, Concrete curing.

42-1434
Quality requirements for machines used in transport constructions of the North. [Trebovaniia k nekotorym pokazateliam kachestva mashin dlia transportnykh stroek Severa],
Popov, D.I., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.7, p.102-105, In Russian.
Transportation, Equipment, Military transportation, Permafrost, Snow depth, Design.

42-1435
Deformation of weak ground foundations reinforced with sand cushions. [Deformatsiia slabogo osnovaniia usilennogo peschanoĭ podushkoĭ],
Bugrova, E.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.7, p.113-116, In Russian. 6 refs.
Loess, Clays, Settlement (structural), Foundations, Rock fills, Sands.

42-1436
Method of calculating temperature regime of soil under a layer of thermal insulation. [Metodika rascheta temperaturnogo rezhima grunta pod sloem teploizoliatsii],
Sander, A.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.7, p.121-124, In Russian. 3 refs.
Druzhinin, S.A., Rusakov, N.L.
Soil freezing, Thermal insulation, Frost protection, Soil temperature, Thermal regime.

42-1437
Determination of the true strength of clay soils. [Opredelenie istinnoĭ prochnosti glinistogo grunta],
Zhikhovich, V.V., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.7, p.125-130, In Russian. 6 refs.
Clay soils, Soil tests, Strength, Soil creep, Rheology.

42-1438
Hydraulic testing of pipelines at subzero temperatures. [Gidravlicheskie ispytaniia truboprovodov pri otritsatel'nykh temperaturakh], *Stroitel'stvo truboprovodov,* Oct. 1987, No.10, p.62-63, In Russian.
Underground pipelines, Tests, Pipeline freezing, Pipeline heating.

42-1439
Ice-hoarfrost deposits in Transbaikal. [Gololednoizmorozevye otlozheniia v Zabaĭkal'e],
Snitsarenko, N.I., *Dal'nevostochnyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy,* 1978, Vol.74, p.101-108, In Russian. 8 refs.
Power line icing, Ice accretion, Hoarfrost, Ice loads, Wind factors.

42-1440
Meteorological conditions during heavy snowfall in the Maritime Territory. [Meteorologicheskie usloviia pri sil'nykh snegopadakh v Primorskom krae],
Khramtsova, V.K., *Dal'nevostochnyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy,* 1978, Vol.74, p.109-116, In Russian. 10 refs.
Snow cover distribution, Soil temperature, Snow depth, Snow water equivalent, Snow loads, Wind factors.

42-1441
Space-time regularities governing the distribution of especially dangerous snowstorms in the Maritime Territory. [Prostranstvenno-vremennye zakonomernosti raspredeleniia osobo opasnykh metelei na territorii Primorskogo kraia],
Tonkikh, T.A., et al, *Dal'nevostochnyĭ nauchno-issledovatel'skiĭ gidrometeorologicheskiĭ institut. Trudy,* 1978, Vol.74, p.117-123, In Russian. 5 refs.
Proskuriakova, L.A.
Snowstorms, Wind velocity, Snow loads, Visibility, Meteorological charts, Meteorological data.

42-1442
Present state and problems of snow damages. [Sekisetsu saigai no genjo to mondaiten],
Aoyama, K., *Operations research (Opereshonzu risachi),* Feb. 1987, 32(2), p.61-65, In Japanese. 7 refs.
Damage, Snow removal, Water pipelines, Water table, Water level, Japan—Aral.

42-1443
Proposal for "northern city planning". [*"Kita no machi zukuri" e no teian*],
Matsuda, T., *Operations research (Opereshonzu risachi)*, Feb. 1987, 32(2), p.66-72, In Japanese.
Urban planning, Indoor climates, Winter, Heat sources, Residential buildings, Snow removal, Roads, Recreation, Japan—Hokkaido.

42-1444
Overall snow countermeasures in Sapporo. [*Sapporo-shi no sogo uuki taisaku ni tsuite*],
Hirohata, T., *Operations research (Opereshonzu risachi)*, Feb. 1987, 32(2), p.73-82, In Japanese.
Urban planning, Economic development, Transportation, Snow removal, Artificial melting, Tires, Japan—Sapporo.

42-1445
Snow damage and operations research. [*Setsugai mondai to opereshonzu risachi*],
Nakatao, T., *Operations research (Opereshonzu risachi)*, Feb. 1987, 32(2), p.88-98, In Japanese. 7 refs.
Damage, Snow removal, Economic analysis.

42-1446
Snow and ice disasters in urban areas (changes in urban areas and natural disasters No.21). [*Toshi no seppyo saigai (shirizu: toshi no henyo to shizen saigai XXI)*],
Wakahama, G., *Japanese scientific monthly (Gakujutsu geppo)*, July 1986, 39(7), p.529-534, In Japanese. 8 refs.
History, Records (extremes), Damage, Weather forecasting, Snow removal.

42-1447
Basic orientation for snow countermeasures in Japan. [*Yaga kuni no yuki taisaku no kihonteki hoko ni tsuite*],
Ishikawa, M., *Ministry of Construction monthly (Kensetsu geppo)*, Dec. 1986, 39(12), p.68-71, In Japanese.
Transportation, Urban planning, Economic development, Snow removal, Snow disposal, Residential buildings, Design.

42-1448
Outline of snow countermeasures in Toyama Prefecture: creation of snow resistant and lively Toyama. [*Toyama-ken ni okeru yuki taisaku no gaiyo: yuki ni tsuyoi ikiiki Toyama no sozo*],
Nobata, M., *Ministry of Construction monthly (Kensetsu geppo)*, Dec. 1986, 39(12), p.72-76, In Japanese.
Regional planning, Snow removal, Transportation, Artificial melting, Water supply, Residential buildings, Law and legislation, Japan—Toyama Prefecture.

42-1449
Diatoms of the McMurdo Ice Shelf, Antarctica: implications for sediment and biotic reworking.
Kellogg, D.E., et al, *Palaeogeography, palaeoclimatology, palaeoecology*, July 1987, 60(1-2), p.77-96, Refs. p.95-96.
Kellogg, T.B.
Algae, Paleobotany, Ice shelves, Antarctica—McMurdo Ice Shelf.
In the course of investigations of the origin of the McMurdo Ice Shelf (MIS), diatoms in 59 sediment samples collected from its upper surface were analyzed. Fragments of centric marine species, most of which occur in the Ross Sea today, were found in all samples, but identifiable marine taxa dominated the total diatom flora in only two samples. In contrast, non-marine diatoms are abundant and diverse in most MIS samples. The combined marine and non-marine diatom floras of the MIS suggest a new mechanism to explain mixed diatom floras and sediments, observed in antarctic cores. These composite floras and sediments may be introduced or reintroduced to the marine environment during austral summers by melt water streaming off the front of the MIS or through crevasses. Additionally, icebergs calved from the MIS release their load of mixed biota and sediment when they melt. These observations may pertain to other present and former antarctic ice shelves that are characterized by surface ablation and basal freezing. (Auth. mod.)

42-1450
Exploration geochemistry. Analytical methods. [*Geokhimicheskie metody poiskov. Metody analiza*],
Tauson, L.V., ed, Irkutsk, 1979, 127p., In Russian. For selected paper see 42-1451. 5 refs.
Exploration, Geochemistry, Minerals, Mining, Chemical analysis.

42-1451
Weakening and enhancement of secondary dispersion halos under taiga conditions. [*Oslablenie i usilenie vtorichnykh oreolov rasseianiia v usloviiakh taigi*],
Zagoskin, V.A., Geokhimicheskie metody poiskov. Metody analiza (Exploration geochemistry. Analytical methods), Irkutsk, 1979, p.20-24, In Russian with English summary. 5 refs.
Forest soils, Cryogenic soils, Taiga, Geochemistry, Soil composition, Minerals, Leaching, Soil water migration.

42-1452
Rock pressure in the main and in preliminary excavations. [*Gornoe davlenie v kapital'nykh i podgotovitel'nykh vyrabotkakh*],
Gritsko, G.I., ed, Novosibirks, Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gornogo dela, 1981, 134p., In Russian. For selected paper see 42-1453. 9 refs.
Mining, Measuring instruments, Models, Thermal conductivity, Frozen rocks, Heat transfer, Frozen ground, Excavation.

42-1453
Stress-strain pickup units for modeling thermal and mechanical processes in frozen ground. [*O datchikakh napriazhenii pri fizicheskom modelirovanii teplovykh i mekhanicheskikh protsessov v merzlykh porodakh*],
Samokhin, A.V., Novosibirsk, Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gornogo dela, 1981, p.119-122, In Russian. 9 refs.
Mining, Frozen rocks, Frozen ground, Excavation, Models, Measuring instruments, Thermal conductivity, Heat transfer.

42-1454
Calculation of placer deformations in northern mines, after caving-step stabilization. [*Raschet deformatsii porod rossypnykh shakht Severa pri ustanovivshemsia shage obrusheniia*],
Sleptsov, A.E., *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, July-Aug. 1986, No.4, p.32-37, In Russian. 4 refs.
Placer mining, Mine shafts, Rock mechanics, Frozen rocks, Deformation, Mathematical models.

42-1455
Determining the rheological characteristics of perennially frozen rocks by processing field test data. [*Opredelenie reologicheskikh kharakteristik mnogoletnemerzlykh gornykh porod obrabotkoĭ dannykh naturnykh ispytanii*],
Sleptsov, A.E., et al, *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, Sep.-Oct. 1986, No.5, p.105-107, In Russian. 6 refs.
Izakson, V.IU.
Permafrost physics, Rheology, Mechanical properties, Tests, Creep, Analysis (mathematics).

42-1456
Penetration of conical strikers into frozen ground. [*Vnedrenie konicheskikh udarnikov v merzlyĭ grunt*],
Koshelev, E.A., et al, *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, Nov.-Dec. 1986, No.6, p.56-61, In Russian. 3 refs.
Chernikov, A.G.
Hardness tests, Frozen ground, Penetrometers.

42-1457
Preparation of high quality calcium magnesium acetate using a Pilot Plant process.
Gancy, A.B., *U.S. Federal Highway Administration.* [*Reporty*], Jan. 1986, FHWA/RD-86/006, 17p. + appends.
Chemical ice prevention, Manufacturing, Chemistry, Particle size distribution, Cost analysis.

42-1458
Behavior of draining pavements in winter: laboratory simulation of glaze. [*Comportement hivernal des enrobes drainants: Essais de simulation de verglas en laboratoire*],
Decoene, Y., CR29/87, Brussels, Centre de recherches routières, [1987], 78p., In French with Flemish, German and English summaries. 19 refs.
Pavements, Glaze, Bituminous concretes, Road icing, Skid resistance, Porosity, Chemical ice prevention, Snow accumulation, Water, Rain.

42-1459
Modeling the Alaskan continental shelf waters.
Liu, S.K., et al, U.S. National Oceanic and Atmospheric Administration, R-3567-NOAA/RC, Santa Monica, CA, Rand Corporation, Oct. 1987, 136p., Refs. p.127-136.
Leendertse, J.J.
Ice conditions, Oil spills, Hydrodynamics, Ice mechanics, Sea ice distribution, Tides, Mathematical models, Wind factors, Bering Sea, Chukchi Sea, Beaufort Sea, United States—Alaska—Gulf of Alaska.

42-1460
Model test of a semisubmersible platform in EGADS model ice.
Szeto, K., et al, *National Research Council, Canada. Institute for Marine Dynamics. Report*, Mar. 1987, LM-AVR-18, 33p. + appends., 11 refs.
Rowe, J., Jones, S.J.
Ice loads, Floating structures, Ice solid interface, Ice models, Tests, Ice pressure, Ice conditions.

42-1461
Transmission of light through ice and snow of Adirondack lakes, New York.
Stewart, K.M., et al, *Internationale Vereinigung für Limnologie. Verhandlungen*, July 1984, No.22, p.72-76, 21 refs.
Brockett, B.E.
Light transmission, Ice optics, Snow optics, Lake ice, Ice cover thickness, Water temperature, Snow depth, Limnology.

42-1462
Glaciological investigations in Norway, 1984. [*Glasiologiske undersökelser i Norge 1984*],
Kjeldsen, O., ed, *Norway. Vassdrags- og energiverk. Vassdragsdirektoratet. V-publikasjon*, June 1, 1987, No.7, 70p., In Norwegian with extended English summary. 8 refs.
Glacier surveys, Glacier mass balance, Glacier tongues, Radio echo soundings, Glacier melting, Drainage, Meltwater, Sediment transport, Snow hydrology.

42-1463
Infrared and Raman spectra of hexagonal ice in the lattice-mode region.
Marchi, M., et al, *Chemical Society, London. Journal. Faraday transactions II: Molecular and chemical physics*, Oct. 1987, 83(10), p.1867-1874, 20 refs.
Tse, J.S., Klein, M.L.
Ice crystal structure, Infrared spectroscopy, Lattice models, Dynamic properties, Spectra, Polarization (waves), Molecular structure.

42-1464
Effect of specimen-volume on the tensile strength of snow.
Narita, H., *Seppyo*, Sep. 1987, 49(3), p.115-121, In Japanese with English summary. 15 refs.
Snow strength, Tensile properties, Volume, Snow density, Snow samplers, Measuring instruments.

42-1465
Characteristic evaluation of steel roof sheet for snow sliding.
Ueno, M., et al, *Seppyo*, Sep. 1987, 49(3), p.131-137, In Japanese with English summary. 7 refs.
Takashima, K., Takamura, H., Fukumoto, H.
Snow slides, Roofs, Steels, Shear strength, Temperature effects, Snow friction, Experimentation, Snow accumulation.

42-1466
Mechanism of avalanche release at Nisshô Pass, Hokkaido, Japan.
Shimizu, H., et al, *Seppyo*, Sep. 1987, 49(3), p.139-145, In Japanese. 4 refs.
Akitaya, E.
Avalanche formation, Avalanche deposits, Snow accumulation, Time factor, Mountains, Measuring instruments.

42-1467
Automobile accidents occurred in the Northeast in winter of 1986/87.
Nakamura, H., *Seppyo*, Sep. 1987, 49(3), p.147-149, In Japanese.
Accidents, Road icing, Trafficability, Skid resistance, Winter.

42-1468
Transfer functions between diatom assemblages and surface hydrology in the southern ocean.
Pichon, J.J., et al, *Palaeogeography, palaeoclimatology, palaeoecology,* Oct. 1987, 61(1-2), p.79-95, Refs. p.93-95.
Labracherie, M., Labeyrie, L.D., Duprat, J.
Algae, Paleoecology, Sea ice distribution, Climatic changes, South Atlantic Ocean, Indian Ocean.
Interpretation of the distribution of 31 marine diatom species and two silicoflagellate genera in 28 core tops from the Atlantic and West Indian sectors of the southern ocean by Q-mode factor analysis allows definition of 3 significantly different floral assemblages, one associated with subantarctic and two with antarctic waters. These 3 areas are clearly delineated by prominent oceanographic limits: the Antarctic Convergence and the maximum retreat of sea-ice during the summer season. A set of paleoecological transfer functions is derived by comparison between the distribution of these associations and surface water hydrological parameters. Numerical tests of paleoecological equations demonstrate their usefulness to reconstruct the evolution of the surface oceanography of the austral ocean at different periods of the last climatic cycle. (Auth. mod.)

42-1469
Excavation of wear-resistant grounds. [Razrabotka prochnykh gruntov].
Chechenkov, M.S., Leningrad, Strolizdat, 1987, 232p., In Russian with abridged English table of contents enclosed. 78 refs.
Artificial thawing, Frozen ground mechanics, Permafrost physics, Hardness, Excavation, Equipment, Earthwork, Thermal drills, Blasting, Defrosting, Frost protection, Permafrost thermal properties.

42-1470
Use of NATM in combination with compressed air and ground freezing during Vienna subway construction.
Deix, F., et al, Rapid Excavation and Tunneling Conference, New Orleans, LA, June 14-17, 1987. Proceedings, Vol.1. Edited by J.M. Jacobs and R.S. Hendricks, Littleton, CO, Society of Mining Engineers, 1987, p.488-506.
Braun, B.
Artificial freezing, Tunneling (excavation), Soil freezing, Air flow, Compressors, Settlement (structural), Tests, Geology, Hydrology, Frost heave.

42-1471
Shaft sinking in difficult ground conditions for the LEP project, Geneva, Switzerland.
Laughton, C., et al, Rapid Excavation and Tunneling Conference, New Orleans, LA, June 14-17, 1987. Proceedings, Vol.2. Edited by J.M. Jacobs and R.S. Hendricks, Littleton, CO, Society of Mining Engineers, 1987, p.924-937, 2 refs.
Dieu, F.
Shaft sinking, Artificial freezing, Soil freezing, Tunneling (excavation), Hydrology, Glacial deposits, Geology, Moraines, Walls, Switzerland—Geneva.

42-1472
Study of grain links in ice Ih by mechanical spectrometry. [Etude des joints de grains dans la glace Ih par spectrométrie mécanique].
Tatibouet, J., et al, *Helvetica physica acta,* 1987, 60(7), p.913-923, In French. 23 refs.
Perez, J., Gobin, P.F.
Ice crystals, Spectroscopy, Ice plasticity, Temperature effects, Grain size, Analysis (mathematics), Doped ice, Tests.

42-1473
Cone penetration testing in snow.
Schaap, L.H.J., et al, *Canadian geotechnical journal,* Aug. 1987, 24(3), p.335-341, With French summary. 11 refs.
Föhn, P.M.B.
Snow strength, Snow density, Snow cover stability, Penetration tests, Shear strength, Measuring instruments, Profiles.

42-1474
Independence of geostatic stress from overconsolidation in some Beaufort Sea clays.
Jefferies, M.G., et al, *Canadian geotechnical journal,* Aug. 1987, 24(3), p.342-356, With French summary. 30 refs.
Crooks, J.H.A., Becker, D.E., Hill, P.R.
Ocean bottom, Marine geology, Soil compaction, Clays, Stresses, Pressure, Measuring instruments, Beaufort Sea.

42-1475
Adfreezing strength of ice to model piles.
Parameswaran, V.R., *Canadian geotechnical journal,* Aug. 1987, 24(3), p.446-452, With French summary. 3 refs.
Ice adhesion, Ice accretion, Piles, Ice strength, Models, Wood, Metals.

42-1476
Single Doppler radar evidence of horizontal roll convection in a lake-effect snow storm.
Kelly, R.D., Conference on Numerical Weather Prediction, 5th, Monterey, CA, Nov. 2-6, 1981. Preprint volume, Boston, American Meteorological Society, 1981, p.533-535, Reprinted in Univ. of Chicago Cloud Physics Lab. Tech. note No.58. 4 refs.
Snowstorms, Lake effects, Radar echoes, Remote sensing, Convection, Wind velocity, Air temperature, Boundary layer, Mapping.

42-1477
Composition and abundance of zooplankton under the spring sea-ice of McMurdo Sound, Antarctica.
Foster, B.A., *Polar biology,* 1987, 8(1), p.41-48, 25 refs.
Plankton, Bottom ice, Ice cover effect, Antarctica—McMurdo Sound.
Zooplankton was sampled through holes in the sea-ice of McMurdo Sound from Nov. 8 to Dec. 10, 1985. Replicated vertical hauls were made to 100 and 300 m off Pram Point in the inner Sound, near the edge of the permanent McMurdo Ice Shelf. The zooplankton was sparse, averaging 2.5 mg/cu m wet weight. The numbers of individual species varied between catches, depths, and occasions. Generally, small copepods numerically dominated the catches, and higher densities of these were present in the shallower 100 m layer. Deeper hauls contained higher numbers of larger crustaceans. Pteropods *Limacina helicina* and *Clione limacina* were also consistently caught, but in equal densities in 100 m and 300 m hauls. Numerous other plankters were caught in low numbers. Comparative samples, from 40 km further north and to 100 m deep, contained a similar species diversity to those near the McMurdo Ice Shelf, but always with higher densities of *L. helicina.* (Auth. mod.)

42-1478
Spectral geometric albedos of the Galilean satellites from 0.24 to 0.34 micrometers: observations with the International Ultraviolet Explorer.
Nelson, R.M., et al, *Icarus,* Nov. 1987, 72(2), p.358-380, 65 refs.
Extraterrestrial ice, Ice optics, Albedo, Spectroscopy.

42-1479
Valles Marineris, Mars: wet debris flows and ground ice.
Lucchitta, B.K., *Icarus,* Nov. 1987, 72(2), p.411-429, 40 refs.
Extraterrestrial ice, Mars (planet), Landslides.

42-1480
Performance of two ice-retardant overlays.
Tanski, J.H., *Public works,* July 1987, 118(7), p.40-43, For another version see 41-248.
Pavements, Ice control, Chemical ice prevention, Road icing, Surface properties, Snow removal, Tests, Ice removal, Salting.

42-1481
Look at a well-run winter maintenance program.
Nielsen, A.D., *Public works,* July 1987, 118(7), p.48-49.
Winter maintenance, Road maintenance, Snow removal, Salting.

42-1482
Forewarned is forearmed: winter weather data from the field. *Public works,* July 1987, 118(7), p.52-53.
Winter maintenance, Monitors, Forecasting.

42-1483
As Maine snow goes, so goes the nation?.
Fontaine, L., *Public works,* July 1987, 118(7), p.59.
Snow disposal, Water pollution.

42-1484
Seeking solutions to salt. *Public works,* July 1987, 118(7), p.60-61.
Salting, Damage.

42-1485
Key to successful winter maintenance.
Stellfox, E.C., *Public works,* July 1987, 118(7), p.62-63, 90-92.
Winter maintenance, Snow removal, Salting.

42-1486
Alaska lays its wildlife on the line.
Pain, S., *New scientist,* Apr. 30, 1987, 114(1558), p.51-55.
Pipelines, Environmental impact.

42-1487
Large-scale ice-strength tests, 1980/81 sea-ice temperature, salinity, and crystallography.
Lee, J., et al, *Exxon Production Research Company. Production research report,* Apr. 1983, EPR.5PR.83, 24p. + appends., 7 refs.
Ice cover strength, Sea ice, Ice crystal structure, Ice temperature, Ice salinity, Temperature effects, Compressive properties, Tests, Ice cover thickness, Photography.

42-1488
Arctic Ocean Buoy Program: Data report, 1 January 1984-31 December 1985.
Colony, R., et al, Seattle, WA, Polar Science Center, Applied Physics laboratory, Oct. 1986, 227p.
Muñoz, E.A.
Data processing, Air temperature, Atmospheric pressure, Sea ice, Meteorological data, Arctic Ocean.

42-1489
National Arctic Information Network, Vols. 1 and 2.
Hickok, D.M., et al, Anchorage, Arctic Environmental Information and Data Center, July 1987, 144p. + appends., Refs. p.141-144.
Sokolov, B.J., Dursi, R.
Data processing, Bibliographies.

42-1490
Technology assessment and research program for offshore minerals operations; 1986 report.
Gregory, J.B., comp, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0082, [1987], 204p., Refs. passim. For selected papers see 42-1491 through 42-1497.
Smith, C.E., comp.
Offshore structures, Offshore drilling, Ice loads, Ice solid interface, Engineering, Research projects, Design, Ice pressure, Hydrocarbons, Ice mechanics, Stresses.

42-1491
Ice-structure interaction.
Sunder, S.S., et al, Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0033, [1987], p.47-51, 5 refs.
Connor, J.J.
Ice pressure, Offshore structures, Ice solid interface, Ice loads, Offshore drilling, Hydrocarbons, Engineering, Strains, Stresses.

42-1492
Probability based design criteria for ice loads.
Jordaan, I., et al, Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0083, [1987], p.52-56, 2 refs.
Nessim, M.
Ice loads, Offshore structures, Ice solid interface, Ice floes, Design criteria, Seasonal variations, Beaufort Sea.

42-1493
Mechanical properties of saline ice.
Schulson, E.M., Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0083, [1987], p.83-86, 8 refs.
Ice mechanics, Ice salinity, Offshore structures, Wind factors, Ocean currents, Impact strength, Velocity, Air temperature, Compressive properties, Ice strength, Tensile properties.

42-1494
Kadluk ice stress measurement program.
Cox, G.F.N., MP 2298, Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0083, [1987], p.100-107, 9 refs.
Ice loads, Ice pressure, Offshore structures, Caissons, Stresses, Ice conditions, Ice temperature, Wind factors.

42-1495
Mechanical properties of multi-year pressure ridge ice.
Richter-Menge, J.A., MP 2299, Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0083, [1987], p.108-119, 19 refs.
Ice mechanics, Pressure ridges, Offshore structures, Ice loads, Ice strength, Impact strength, Ice salinity, Ice density, Strain tests, Ice structure, Temperature effects.

42-1496
Punching shear resistance of lightweight concrete offshore structures for the Arctic.
Lew, H.S., Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0083, [1987], p.128-130.
Offshore structures, Concrete structures, Shear strength, Ice loads, Ice conditions, Lightweight concretes, Impact strength.

42-1497
Evaluation of short, large diameter piles for Arctic structures.
Cheang, L.C., Technology assessment and research program for offshore minerals operations; 1986 report. Compiled and edited by J.B. Gregory and C.E. Smith, U.S. Dept. of Interior, Minerals Management Service, OCS study MMS 86-0083, [1987], p.141-150, 11 refs.
Offshore structures, Ice loads, Pile structures, Design, Ice pressure, Ice mechanics, Velocity.

42-1498
Influence of temperature of the frozen rocks surrounding an excavation on their state of stress. [Vliianie temperatury vmeshchaiushchego vyrabotku massiva merzlykh disperanykh gornykh porod na napriazhennoe sostoianie],
Kovlekov, I.I., *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, May-June 1987, No.3, p.20-24, In Russian. 7 refs.
Permafrost physics, Frozen fines, Frozen rock temperature, Mining, Mechanical properties.

42-1499
Penetration of an axially symmetrical conic projectile into frozen ground. [K zadache o pronikanii osesimmetrichnogo konicheskogo udarnika v merzlyĭ grunt],
Koshelev, E.A., *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, May-June 1987, No.3, p.52-57, In Russian. 9 refs.
Frozen fines, Projectile penetration, Impact strength, Physical properties, Tests.

42-1500
Experience in topographic mapping of glaciers. [Ob opyte topograficheskogo kartografirovaniia lednikov],
Kuz'michenok, V.A., et al, *Geodeziia i kartografiia*, Jan. 1987, No.1, p.30-34, In Russian. 6 refs.
Tsurkov, V.E.
Glaciers, Snow surveys, Ice cover thickness, Topographic surveys, Topographic maps, Spaceborne photography, Photointerpretation, Bottom topography, Snow cover distribution, Subglacial observations, Glacier ice.

42-1501
Determining bottom elevations for topographic surveys of shallow inlets from ice. [Opredelenie vysot dna pri topograficheskoĭ s"emke melkovodnykh zalivov so l'da],
Kabatskiĭ, G.I., *Geodeziia i kartografiia*, May 1987, No.5, p.52-54, In Russian. 5 refs.
Sea ice, Shores, Fast ice, Topographic surveys, Bottom topography.

42-1502
Volcanic activities recorded in the antarctic ice sheet.
Nishio, F., *Polar news*, Aug. 1986, No.43, p.2-9, In Japanese.
Ice cores, Volcanic ash, Paleoclimatology.
Deep ice cores from the polar regions of Antarctica and Greenland contain extensive records of paleoclimate and paleoatmospheric composition in the form of soluble and insoluble impurities, stable isotope variations and gases trapped in air bubbles in the ice. Especially, many tephra layers were observed in the ice cores recovered from Byrd Station and examined whether the volcanism recorded in the Byrd core affected the paleoclimate and atmospheric chemistry during the last glacial period. In the Northern Hemisphere during the past 10,000 years, large volcanic eruptions were revealed by acidity profiles along well dated Greenland ice cores, and comparison with a temperature index shows that clustered eruptions have a considerable cooling effect on climate. Recently many dirt layers of tephra were found on the bare ice surface in the Meteorite Ice Field near the Yamato Mountains, Dronning Maud Land, and near the Allan Hills, Victoria Land, Antarctica. The Yamato ash has been derived from a volcano of the South Sandwich Islands, which are about 3000 km away from the Yamato Mountains. The Allan ash may have been supplied from some young volcano of the McMurdo Volcanic Group. These studies of tephra layer in the bare ice area provide useful information on paleoclimate and mechanism of meteorite concentration.

42-1503
Activities of the 26th JARE wintering party.
Fukunishi, H., *Polar news*, Aug. 1986, No.43, p.17-22, In Japanese.
Research projects, Ice sheets.
The activities of the 26th JARE wintering party at Showa and Mizuho stations in 1985 are briefly summarized. The main scientific activities are, 1) Map (Middle Atmosphere Program), 2) glaciological study of the dome area of the East Queen Maud Land, and 3) environmental monitoring of the area along the coast of the Lützow-Holm Bay. Ground-based, balloon and rocket observations were carried out at Showa Station for MAP. The traverse party for the glaciological study reached the top of the East Queen Maud Land dome (77 22'S, 39 36'E, 3807 m above sea level). Improved wintering life at Showa Station is also introduced. The topics in wintering life are a successful operation of color TV telephone between Showa Station and Japan, a daily newspaper published using a Japanese word processor, and a comfortable Japanese-style bathroom constructed in a new power station.

42-1504
From the Antarctic Inland Dome to Asuka Camp.
Ageta, Y., *Polar news*, Aug. 1986, No.43, p.28-44, In Japanese.
Traverses, Ice sheets, Logistics, Ice cores.
The 26th Japanese Antarctic Research Expedition (JARE) 1984-1986 extended the field work of the East Queen Maud Land Glaciological Project, which was initiated by JARE-23. The major activities of JARE-26 involved oversnow traverses toward the inland plateau and Sör Rondane Mountains, and ice core drillings of 200 m, 40 m and 100 m in depth at the Advance Camp (74 12'S, 34 59'E), the Dome Camp (77 00'S, 35 00'E) and S25 (69 02'S, 40 28'E), respectively. The main traverse of JARE-26 was planned to make observations around a dome-like plateau (Valkyrjedomen), where the second highest dome of the antarctic ice sheet is situated. The highest area of that plateau was named 'Dome Fuji' by the party, unofficially. At the end of the first summer of the wintering in Feb. 1985, a base house was constructed at the Advance Camp. A traverse toward the dome was carried out during the second summer of the wintering in Nov. and Dec. 1985, and the highest place of this dome was found at 77 22'S, 39 37'E with an altitude of 3,807 m by the use of the doppler satellite positioning system. After the above traverse, the routes from the Advance Camp to Asuka Camp at the north Sör Rondane Mountains were connected.

42-1505
Glacier mapping in the Alps.
Brunner, K., *Mountain research and development*, Nov. 1987, 7(4), p.375-385, With French and German summaries. 34 refs.
Glacier surveys, Mapping, History.

42-1506
Large-scale snow depletion maps of the Gurgl Valley, Ötztal, Tyrol, Austria, showing habitat variety in an alpine terrain.
Kölbel-Deicke, H., et al, *Mountain research and development*, Nov. 1987, 7(4), p.387-404, With French and German summaries. 43 refs.
Heuberger, H.
Snow surveys, Maps, Snow melting, Austria—Gurgl Valley.

42-1507
Multiple numerical solutions of buoyancy induced flows of a vertical ice wall melting in saturated porous media.
Wang, C.A., *Computers & mathematics with applications*, 1987, 14(7), p.527-540, 19 refs.
Ice melting, Buoyancy, Water flow, Porosity.

42-1508
Groundwater storage-streamflow relations during winter in a subarctic wetland, Saskatchewan.
Price, J.S., et al, *Canadian journal of earth sciences*, Oct. 1987, 24(10), p.2074-1081, With French summary. 22 refs.
FitzGibbon, J.E.
Ice (water storage), Drainage, Ground water, Water storage.

42-1509
Life in the cold: introduction to winter ecology.
Marchand, P.J., Hanover, NH, University Press of New England, 1987, 176p., Refs. p.157-166.
Cold exposure, Cold weather survival, Snow cover effect, Plant physiology, Cold tolerance, Ecology, Animals, Vegetation, Climatic factors.

42-1510
Feasibility study: air cushion drilling system for the shallow water areas off the North Slope of Alaska.
Global Marine Development Inc, RPT-04088-001, Newport Beach, CA, Feb. 8, 1979, 7 sections, Prepared for Exxon Co., Houston, TX.
Ice loads, Offshore drilling, Air cushion vehicles, Floating structures, Logistics, Ice solid interface, Cost analysis, Design.

42-1511
New temperature distribution maps for Greenland.
Ohmura, A., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1987, 23(1), p.1-45, With German summary. 43 refs.
Temperature distribution, Air temperature, Ice temperature, Meteorological data, Surface temperature, Statistical analysis, Ice sheets, Maps, Greenland.

42-1512
Statistical analyses of snow depths in the area of Hoher Sonnblick; contribution to the topic of glacier oscillations. [Statistische Analysen der Schneehöhen im Gebiet des Hohen Sonnblicks; ein Beitrag zu Fragen der Gletscherschwankungen],
Böhm, R., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1987, 23(1), p.47-63, In German with English summary. 17 refs.
Mohnl, H.
Snow stakes, Glacier oscillation, Snow depth, Glacier mass balance, Statistical analysis.

42-1513
Origin of pradolinas.
Koutaniemi, L., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1987, 23(1), p.65-76, With German summary. 37 refs.
Rachocki, A.H.
Stream flow, Ice edge, Paleoclimatology, Meltwater, Soil erosion, Valleys.

42-1514
Comparison of resistivity and radio-echo soundings on rock glacier permafrost.
King, L., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1987, 23(1), p.77-97, Refs. p.95-97.
Fisch, W., Haeberli, W., Waechter, H.P.
Permafrost physics, Radio echo soundings, Rock glaciers, Seismic refraction, Sediments, Electrical resistivity, Talus, Glacier ice, Switzerland—Alps.

42-1515
Icequakes on the Schlatenkees, Hohe Tauern, Austria.
Von der Osten-Woldenburg, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1987, 23(1), p.99-113, With German summary. 16 refs.
Icequakes, Seismic surveys, Crevasses, Glacier flow, Ice friction, Analysis (mathematics).

42-1516
Physical properties of summer sea ice in the Fram Strait, June-July 1984.
Gow, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1987, CR 87-16, 81p., ADA-186 937, 39 refs.
Tucker, W.B., Weeks, W.F.
Ice physics, Ice crystal structure, Ice floes, Snow depth, Ice salinity, Brines, Frazil ice, Ice water interface, Seasonal variations, Greenland Sea.
The physical properties of sea ice in the Fram Strait region of the Greenland Sea were examined during June and July 1984 in conjunction with the MIZEX field program. Most of the ice sampled within Fram Strait during this period was multi-year; it is estimated to represent at least 84% by volume of the total ice discharged from Fram Strait during June and July. Thickness and other properties indicated that none of the multi-year ice was older than 4 to 5 years. Snow cover on the multi-year ice averaged 29 cm deep while that on first-year averaged only 8 cm. Much of this difference appears to be the result of enhanced sublimation of the snow on the thinner first-year ice. The salinity profiles of first-year ice clearly show the effects of ongoing brine drainage in that profiles from cores drilled later in the experiment were substantially less saline than earlier cores. Bulk salinities of multi-year ice are generally much lower than those of first-year ice. This difference furnished a very reliable means of distinguishing between the two ice types. Thin section examinations of crystal structure indicate that about 75% of the ice consisted of congelation ice with typically columnar type crystal structure. The remaining 25% consisted of granular ice with only a few occurrences of snow ice. The granular ice consisted primarily of frazil, found in small amounts at the top of floes, but mainly observed in multi-year ridges where it occurred as the major component of ice in interblock voids.

42-1517
Evaluation of the magnetic induction conductivity method for detecting frazil ice deposits.
Arcone, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1987, CR 87-17, 12p., ADA-186 940, 13 refs.
Brockett, B.E., Lawson, D.E., Chacho, E.F.
Ice detection, Frazil ice, Ice growth, Icebound rivers, Magnetic surveys, Subglacial observations, Water flow, Measuring instruments.
The ability to map frazil ice deposits and water channels beneath an ice-covered river in central Alaska using the magnetic induction conductivity (MI) technique has been assessed. The study was performed during the first week of Mar. 1986 on the Tanana River near Fairbanks and employed a commercially available instrument operating at a fixed frequency with a fixed antenna (coil) spacing and orientation. Comparisons of the MI data with theoretical models based upon physical data measured along three cross sections of the river demonstrate the sensitivity of the MI technique to frazil ice deposits. The conductivity generally derived for the frazil ice deposits encountered is very low (about 6.3 x 1/10,000 S/m) when compared with the measured value for water (about 0.011 S/m), and is similar to the calculated values for gravel and sandy gravel bed sediments. In all three cross sections, maxima in the apparent conductivity profiles correlated with frazil ice deposits. Difficulties, possi-

bly due to adverse effects of cold weather upon instrument calibration, affected the quantitative performance of the instrument on one cross section, although the interpretation of the data (locations of open channels vs frazil deposits) was qualitatively unaffected.

42-1518
Automatic finite element mesh generator.
Albert, M.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1987, CR 87-18, 27p., ADA-186 939, 10 refs.
Warren, J.L.
Heat transfer, Fluid dynamics, Computer programs, Mathematical models, Engineering.
Finite element computer codes are used in a variety of fields to solve partial differential equations of importance in science and engineering. The initial input to all of these programs requires the formation of a mesh (i.e., extensive lists of geometrical data listed in particular orders), and the success of the solution depends on a well-formed mesh. This report documents a mathematical mapping technique and its implementation into a computer code that will automatically generate quality finite element meshes. This versatile generator uses standard FORTRAN, requires no special equipment (such as a digitizer), is very economical to run, and is user-friendly. The mathematical technique is discussed, advantages and limitations of the method are presented, examples are shown, and notes on user instructions are provided.

42-1519
Approximate solutions of heat conduction in a medium with variable properties.
Yen, Y.-C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1987, CR 87-19, 18p., ADA-186 933, 6 refs.
Snow physics, Heat transfer, Conduction, Analysis (mathematics), Heat balance, Thermal conductivity.
The approximate heat balance integral method (HBIM) is extended to the case of a medium with variable properties such as snow. The case of linear variation of thermal conductivity is investigated. An alternative heat balance integral method (AHBIM) is developed. Both constant surface temperature and surface heat flux are considered. A comparison is made of the temperature distribution from the HBIM, AHBIM and the analytical method for the case of constant surface temperature. In general, results agree quite well with the analytical method for small values of dimensionless time *tau*, but the difference becomes more pronounced as *tau* increases. It is found that the AHBIM with a quadratic temperature profile gives a somewhat better result, especially when the value of the dimensionless distance is small. The results, when compared with those from HBIM, AHBIM and the analytical method are found to agree exceptionally well with the analytical method, especially for large values of *tau*.

42-1520
All-Union conference on speleology and studies of karst, Kiev, Oct. 1987. Problems of study, ecology and preservation of caves. Summaries. (Problemy izucheniia, ekologii i okhrany peshcher. Tezisy dokladov),
Vsesoiuznoe soveshchanie po speleologii i karstovedeniiu, Kiev, Oct. 1987, Kiev, 1987, 199p., In Russian. For selected summaries see 42-1521 and 42-1522.
Pecherkin, I.A., ed.
Ice caves, Thermokarst, Icing.

42-1521
Studying the origin of thermokarst caves. (Izuchenie genezisa gidrotermokarstovykh peshcher),
Dublianskiĭ, IU.V., Problemy izucheniia, ekologii i okhrany peshcher. Tezisy dokladov (Problems of study, ecology and preservation of caves. Summaries) edited by I.A. Pecherkin, Kiev, 1987, p.25-27, In Russian.
Thermokarst, Ice caves.

42-1522
Caves in permafrost at the Vilyuy River. (Peshchery v merzlykh porodakh na r. Viliui),
Filippov, A.G., Problemy izucheniia, ekologii i okhrany peshcher. Tezisy dokladov (Problems of study, ecology and preservation of caves. Summaries) edited by I.A. Pecherkin, Kiev, 1987, p.108-109, In Russian.
Permafrost structure, Ice volume, Ice caves, Thermokarst.

42-1523
Designing the bearing ground beneath gas pipelines for frost heave compensation. (Zashchita gazoprovodov gruntovymi kompensatoramiĭ),
Borovkov, V.A., et al, *Gazovaia promyshlennost'*, Dec. 1986, No.12, p.33, In Russian. 4 refs.
Vrachev, V.V., Kharionovskiĭ, V.V.
Underground pipelines, Permafrost beneath structures, Frost heave, Gas pipelines.

42-1524
Efficient supports for pipelines. (Ekonomichnye opory truboprovodaĭ),
Natrov, G.V., et al, *Gazovaia promyshlennost'*, Dec. 1986, No.12, p.34, In Russian.
Mezhogskikh, M.I., Spiridovich, E.A.
Cost analysis, Pipeline supports, Swamps, Foundations, Plates, Seasonal freeze thaw, Design.

42-1525
Technology of stripping for pipeline construction on swamps. (Tekhnologiia vskrytiia truboprovodov na bolotakh),
Borisenkov, I.A., et al, *Gazovaia promyshlennost'*, Dec. 1986, No.12, p.34-35, In Russian.
Swamps, Pipe laying, Foundations, Pits (excavations), Excavation, Permafrost beneath structures.

42-1526
River ice mapping with Landsat and video imagery.
Gatto, L.W., et al, MP 2273, William T. Pecora Memorial Symposium on Remote Sensing, 11th, Sioux Falls, SD, May 5-7, 1987. Proceedings, Silver Spring, MD, Institute of Electrical and Electronics Engineers, Computer Society Press, 1987, p.352-363, 10 refs.
Daly, S.F., Carey, K.L.
DLC G70.4.W44
River ice, Ice conditions, Remote sensing, Mapping, LANDSAT, Aerial surveys, Photography, Ice navigation.
As part of the Corps of Engineers River Ice Management Program, Landsat imagery and low-altitude video imagery were used to map ice conditions along the Ohio, Allegheny, Monongahela, Illinois, and Kankakee Rivers. The imagery was analyzed using photointerpretation techniques. Landsat imagery was used to map river ice from 1972 through 1984. The video imagery was used from 1984 to 1987. Ice conditions on these rivers can change rapidly, often daily, and the areal extent of ice is typically greatest from mid-Jan. to mid-Feb. In spite of the small-scale and limited coverage of Landsat imagery, it is useful for analysis of general river ice conditions, especially during severe winters when ice becomes extensive. Video imagery is an economical means of documenting river ice conditions, although cloud cover, inclement weather, and low ceilings restrict opportunities for more frequent coverage. It also can provide near-real-time data when extreme ice conditions cause navigation emergencies.

42-1527
C:N ratios in two contrasting antarctic peat profiles.
Christie, P., *Soil biology and biochemistry*, 1987, 19(6), p.777-778, 14 refs.
Mosses, Peat, Signy Island.
In a study of 2 contrasting bryophyte-dominated communities on Signy I., the changes in concentration of organic C and total N, determined at monthly intervals throughout the summer, are compared. C:N ratios at various depths within the peat profiles were calculated and are discussed in relation to the different amounts of peat accumulation under the two contrasting vegetation types. The two sites on Signy I. were established for long-term study in 1970 and 1071. The relatively dry turf community is dominated by *P. alpestre* and *C. sciphyllum* while the permanently wet carpet is dominated by the mosses *C. sarmentosum, C. austrostramineum* and *D. uncinatus*. The mean organic C and total N results at different depths within the peat profiles are presented in a table, together with the means of the calculated C:N ratios. The differences in C:N ratio observed between these two moss communities are so large that they serve to emphasize the difference in decomposition rate which has contributed to the very large difference in the extent of peat accumulation in the two contrasting community types. (Auth. mod.)

42-1528
Study of Dakshin Gangotri ice-shelf.
Sharma, S.S., *India. Department of Ocean Development. Technical publication*, 1986, No.3, p.243-248, 2 refs.
Ice shelves, Snow accumulation, Ice cover thickness, Topographic features, Antarctica—Dakshin Gangotri Station.
The ice shelf on which the Indian station Dakshin Gangotri is located forms part of an unnamed ice-shelf. Snow studies pertaining to this ice-shelf, carried out during 1983-'85 and the studies carried out in the past are described in this paper. During the period of study, the central part of this ice-shelf, where Dakshin Gangotri is located, experienced severe blizzards and a substantial amount of snow accumulation. The net snow accumulation in this region is 70 to 80 cm/year. This part of the ice shelf is fairly stable and has a negligible flow rate. Measurements on ice thickness, carried out in the past, indicate the average thickness in the region of the station is about 390 m. (Auth.)

42-1529
Rates of chemical weathering of rocks and minerals.
Colman, S.M., ed, Orlando, FL, Academic Press, Inc., 1986, 603p., Refs. passim. For selected papers see 42-1530 through 42-1532.
Dethier, D.P., ed.
Minerals, Weathering, Chemistry, Frozen ground physics, Rocks, Glacial deposits, Deserts, Polar regions, Meteorological factors.

42-1530
Etching of hornblende grains in the matrix of alpine tills and periglacial deposits.
Hall, R.D., et al, Rates of chemical weathering of rocks and minerals. Edited by S.M. Colman and D.P. Dethier, Orlando, FL, Academic Press, Inc., 1986, p.101-128, 18 refs.
Martin, R.E.
Weathering, Minerals, Periglacial processes, Mountains, Corrosion, Chemistry.

42-1531
Rates of hornblende etching in soils on glacial deposits, Baffin Island, Canada.
Locke, W.W., Rates of chemical weathering of rocks and minerals. Edited by S.M. Colman and D.P. Dethier, Orlando, FL, Academic Press, Inc., 1986, p.129-145, 40 refs.
Glacial deposits, Erosion, Minerals, Weathering, Soil erosion, Paleoclimatology, Soil dating.

42-1532
Processes and rates of weathering in cold and polar desert environments.
Ugolini, F.C., Rates of chemical weathering of rocks and minerals. Edited by S.M. Colman and D.P. Dethier, Orlando, FL, Academic Press, Inc., 1986, p.193-235, Refs. p.227-235.
Permafrost weathering, Deserts, Chemistry, Freeze thaw cycles, Climatic factors, Polar regions, Wind erosion, Carbon dioxide, Frost shattering, Ions.
Adverse climatic conditions prevailing in the polar and cold deserts are unfavorable for intense weathering, especially chemical weathering. Paucity of water in the liquid phase hampers processes for which water is essential. Low temperatures also affect the rates of chemical reactions. In the polar desert and in the ice-free areas of Antarctica cavernous weathering once attributed to wind abrasion and frost shattering is now accepted as also due, at least in part, to salt weathering. Since in polar and cold desert regions biological activity is low, chemical weathering is considerably attenuated. In these regions weathering occurs in neutral conditions and in a high-ionic-strength liquid phase. In Antarctica a few quantitative studies have documented some time-dependent properties of soils. This is the case for weathering sequences examined in the ice-free areas of southern Victoria Land. In these studies it has been demonstrated that clay and free iron hydroxides increase with age. It has also been demonstrated that authigenic mica developed from feldspar could form in about 4 m.y. (Auth. mod.)

42-1533
Shipper requirements in the Arctic.
Luce, M., Precise Navigation Workshop, Nov. 13, 1986. Proceedings. Edited by M. Walker, Transport Canada, 1986, p.13-18. TP 8407E.
Ice navigation, Ports, Ice conditions, Icebreakers.

42-1534
Topographic control over recent glacier changes in southern Lyngen Peninsula, North Norway.
Gellatly, A.F., et al, *Norsk geografisk tidsskrift*, Dec. 1986, 49(4), p.211-218, 17 refs.
Whalley, W.B., Gordon, J.E.
Glacier oscillation, Avalanche formation, Ice mechanics, Glacier alimentation, Ice edge, Topographic features, Valleys, Norway—Lyngen.

42-1535
Phase-change front prediction by measuring the wall temperature on which solidification occurs.
Chun, M.-H., et al, *International journal of heat and mass transfer*, Dec. 1987, 39(12), p.2641-2650, With French, German and Russian summaries. 16 refs.
Choi, H.-O., Jun, H.-G., Kim, Y.-S.
Phase transformations, Liquid solid interfaces, Freezing, Temperature distribution, Walls, Desalting, Water, Solid phases, Convection, Analysis (mathematics).

42-1536
Phase change problem with temperature-dependent thermal conductivity and specific heat.
Oliver, D.L.R., et al, *International journal of heat and mass transfer*, Dec. 1987, 30(12), p.2657-2661, With French, German and Russian summaries. 5 refs.
Sunderland, J.E.
Freeze thaw cycles, Phase transformations, Thermal conductivity, Heat transfer, Specific heat, Mathematical models, Stefan problem.

42-1537
Outer Continental Shelf Environmental Assessment Program; Final reports of principal investigators, Vol.40. Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessment Division, Alaska Office, June 1986, 503p., PB87-191946, Refs. passim. Contains 9 papers.
Oil spills, Sea ice distribution, Ice edge, Interfaces, Oceanography, Ocean waves, Bering Sea, Beaufort Sea.

42-1538
Outer Continental Shelf Environmental Assessment Program; Final reports of principal investigators, Vol.41. Anchorage, Alaska, U.S. National Oceanic and Atmospheric Administration, Ocean Assessment Division, Alaska Office, June 1986, 519p., PB87-192043, Refs. passim. Contains 3 papers.
Tides, Suspended sediments, Ocean currents, Chemical composition, Sediment transport, Meteorology, Oceanography, Beaufort Sea, Chukchi Sea, Bering Sea.

42-1539
Microstructural and permeability properties of alkali-activated slag concrete.
Häkkinen, T., et al, *Finland. Technical Research Centre. Research reports*, 1987, No.486, 69p. + appends., 7 refs.
Pyy, H., Koskinen, P.
Concrete durability, Microstructure, Concrete aggregates, Temperature effects, Concrete curing, Porous materials, Tests, Salt water.

42-1540
Construction and testing of an ultrasonic velocimeter. [Construction et essai d'un vélocimètre à ultrasons],
Legault, G., *Transport Canada. Report*, June 1987, TP 8551F, 29p. + appends., In French with English summary. 9 refs.
Ultrasonic tests, Icebreakers, Radar echoes, Velocity, Computer programs.

42-1541
Iceberg grounding model results for northern Grand Bank, 1983-1986, and selected consolidation and retrieval of ice scour data base.
D'Apollonia, S.J., *Canada. Geological Survey. Open file*, July 1986, No.1587, 106p.
Ice scoring, Icebergs, Grounded ice, Models, Computer programs, Charts.

42-1542
Evaluation of the thickness of nonfreezing water films from the measurement of thermocrystallization and thermocapillary flows.
Deriagin, B.V., et al, *Langmuir*, 1987, 3(5), p.631-634, Presented at the 8th Conference on Surface Forces, Moscow, Dec. 3-5, 1985. 19 refs.
Churaev, N.V., Kiseleva, O.A., Sobolev, V.D.
Water films, Ice water interface, Capillarity, Crystal growth, Surface properties, Flow rate, Temperature gradients, Vapor diffusion.

42-1543
Dynamic compaction of roadways.
Reckard, M.K., *U.S. Federal Highway Administration. Report*, Aug. 1986, FHWA/AK/RD-87/05, 34p. PB87-164 364/XAB.
Permafrost beneath roads, Ground thawing, Soil mechanics, Rheology, Road maintenance, Trafficability, Cost analysis, United States—Alaska.

42-1544
Understanding underwater acoustics under the arctic ice canopy.
Ramsdale, D.J., et al, *Sea technology*, July 1987, 28(7), p.22-28, 14 refs.
Posey, J.W.
Subglacial observations, Underwater acoustics, Ice cover effect, Ice bottom surface, Measuring instruments, Models.

42-1545
High impact strength conductors for electromechanical cables.
Scala, E.P., et al, *Sea technology*, July 1987, 28(7), p.29-33, 42.
Bentley, D.L.
Cables (ropes), Mountain glaciers, Ocean bottom, Coring, Military engineering, Oil wells, Impact strength, Design.

42-1546
Generation of liquid water on Mars through the melting of a dusty snowpack.
Clow, G.D., *Icarus*, Oct. 1987, 72(1), p.95-127, Refs. p.125-127.
Extraterrestrial ice, Snowmelt, Unfrozen water content, Runoff, Solar radiation, Analysis (mathematics), Grain size, Thermal conductivity, Paleoclimatology, Cosmic dust.

42-1547
Macroclimatic data and its interpretation for problems of building deterioration.
Keeble, E., *Chemistry and industry*, Sep. 7, 1987, No.17, p.593-602, 53 refs.
Weathering, Temperature effects, Buildings, Wind factors, Air pollution, Freeze thaw cycles, Damage, Climatic factors, Stresses, Porous materials.

42-1548
Firn densification by grain-boundary sliding: a first model.
Alley, R.B., *Journal de physique*, Mar. 1987, 48(3), p.C1-249-C1-256, 21 refs.
Ice models, Grain size, Polar regions, Antarctica—South Pole, Antarctica—Dome C.
Densification in highly porous, isothermal firn occurs primarily by Newtonian sliding on grain boundaries, but the coordination number increases with density and restricts further sliding. At a relative density of about 0.6 the coordination number approaches 6 and sliding ceases to be a primary mechanism of densification; the resulting decrease in densification rate causes the critical point in depth-density profiles. A simple model for densification by boundary sliding yields a good fit to observed profiles. The viscosities so obtained give an activation energy equal to that for grain-boundary diffusion. (Auth.)

42-1549
Water frost on Charon.
Buie, M.W., et al, *Nature*, Oct. 8, 1987, 329(6139), p.522-523, 10 refs.
Cruikshank, D.P., Lebofsky, L.A., Tedesco, E.F.
Extraterrestrial ice, Spectra, Planetary environments.

42-1550
Calculation of the freezing of Lake Sevan.
Shishkaev, S.M., *Soviet meteorology and hydrology*, 1987, No.5, p.76-81, Translated from Meteorologiia i gidrologiia, 1987, No.5, p.91-96. 4 refs.
Lake water, Mathematical models, Air temperature, Ice formation, Ice conditions, Climatic factors, Water level, Wate. temperature.

42-1551
Three-dimensional numerical model of cloud crystallization with dry ice seeding.
Khvorost'ianov, V.I., *Soviet meteorology and hydrology*, 1987, No.4, p.19-27, Translated from Meteorologiia i gidrologiia, No.4, p.29-37, 1987. 25 refs.
Mathematical models, Cloud dissipation, Ice nuclei, Freezing nuclei, Dry ice (trademark).

42-1552
Intense icing in mountain regions and ways to improve ice deposit measurements.
Podrezov, O.A., et al, *Soviet meteorology and hydrology*, 1987, No.4, p.45-50, Translated from Meteorologiia i gidrologiia, No.4, p.59-65, 1987. 9 refs.
Popov, N.I., Naumov, A.D.
Alpine landscapes, Icing, Climatic factors, Topographic effects, Ice loads, Power line icing, Ice formation, Ice accretion, Measuring instruments.

42-1553
Compositional method of calculating probability distribution of the volume of spring flood runoff.
Rozhdestvenskiĭ, A.V., et al, *Soviet meteorology and hydrology*, 1987, No.4, p.76-81, Translated from Meteorologiia i gidrologiia, No.4, p.93-99, 1987. 8 refs.
Tikhomirova, A.A.
Flood forecasting, Mathematical models, Flood control, River basins, Runoff, Snow water equivalent, Floods, Volume.

42-1554
Icing and ice sticking to ships during autumnal-winter navigation.
Voevodin, V.A., et al, *Engineering Consulting and Translation Center, Jackson Heights, NY. Translation*, [1987], T-815-18, 6p., For Russian original see 36-2184. 7 refs.
Migulin, A.I., Panov, V.V.
Ship icing, Ice adhesion, Ice navigation, Icebergs, Ice cover thickness.

42-1555
On the design values of the uniaxial compressive strength of sea ice.
Vialov, S.A., et al, *Engineering Consulting and Translation Center, Jackson Heights, NY. Translation*, [1987], T-845-42, 6p., Translated from: Proceedings of the Conferences and Meetings on Hydraulic Engineering "Ice Management on Rivers and Water Reservoirs when Constructing and Operating Hydrotechnical Structures". Published by All-Union Research Institute of Hydraulic Engineering, Leningrad, 1984. 8 refs.
Golubov, A.I.
Ice pressure, Offshore structures, Ice strength, Compressive properties, Ice mechanics, Design, Ice loads, Ice physics.

42-1556
New deicing device for hydrotechnical structures.
Kytin, IU.A., et al, *Engineering Consulting and Translation Center, Jackson Heights, NY. Translation*, [1987], T-845-77, 4p., Translated from: Proceedings of the Conferences and Meetings on Hydraulic Engineering "Ice Management on Rivers and Water Reservoirs when Constructing and Operating Hydrotechnical Structures". Published by All-Union Research Institute of hydraulic Engineering, Leningrad, 1984. 2 refs.
Moiseev, V.I., Vasil'ev, N.K.
Icing, Ice prevention, Offshore structures, Ice removal, Electric heating, Ice cover thickness.

42-1557
Mathematical model for predicting icebreaker performance.
Carter, D., *Transport Canada. Report*, June 1987, TP 8531E, 102p., With French summary. 44 refs.
Icebreakers, Ice breaking, Ice strength, Ice cover thickness, Mathematical models, Friction, Velocity, Forecasting, Tests.

42-1558
Dynamics of continuous-mode icebreaking by a polar-class icebreaker hull.
Ettema, R., et al, *Iowa. University. Iowa Institute of Hydraulic Research. Report*, June 1987, No.314, 177p., Refs. p.58-62.
Stern, F., Lazaro, J.
Ice breaking, Icebreakers, Ice strength, Dynamic properties, Analysis (mathematics), Velocity, Tests.

42-1559
Final report.
Arctic Five-Year Research Plan Consultative Workshop, Anchorage, Alaska, Nov. 17-19, 1986, Washington, D.C., Toborg Associates, Inc., Apr. 7, 1987, 121p. + appends.
Research projects, Ice mechanics, Weather observations, Meetings, Models, Ecosystems.

42-1560
Ice thickness data, winter 1982-1983.
Canada. Atmospheric Environment Service. Ice Centre, Ottawa, Ontario, 1987, 61p., In English and French.
Ice cover thickness, Freezeup, Ice breakup, Snow depth, Meteorological stations, Canada.

42-1561
Measurement of airborne snow mass concentration.
Hutt, D., et al, *Canada. Defence Research Establishment. Report*, Dec. 1987, 4454/87, 40p., With French summary. 14 refs.
Bissonnette, L., Oman, J.
Snowfall, Snow optics, Falling bodies, Distribution, Measuring instruments, Design, Light scattering, Particle size distribution, Infrared reconnaissance.

42-1562
Model of push moraine development in the marginal zone of the Leszno Phase, West Central Poland.
Kasprzak, L., *Quaternary studies in Poland*, 1985, No.6, p.23-54, Refs. p.52-54.
Moraines, Paleoclimatology, Glaciation, Ice wedges, Glacial geology, Glacial deposits, Ice sheets, Ice mechanics, Deformation.

42-1563
Melting and shedding of graupel and hail. Part I: Model physics.
Rasmussen, R.M., et al, *Journal of the atmospheric sciences*, Oct. 1, 1987, 44(19), p.2754-2763, 52 refs.
Heymsfield, A.J.
Snow pellets, Hailstone growth, Melting, Models, Heat transfer.

42-1564
Melting and shedding of graupel and hail. Part II: Sensitivity study.
Rasmussen, R.M., et al, *Journal of the atmospheric sciences*, Oct. 1, 1987, 44(19), p.2764-2782, 21 refs.
Heymsfield, A.J.
Snow pellets, Hailstone growth, Melting, Models, Heat transfer.

42-1565
Melting and shedding of graupel and hail. Part III: Investigating the role of shed drops as hail embryos in the 1 August CCOPE severe storm.
Rasmussen, R.M., et al, *Journal of the atmospheric sciences*, Oct. 1, 1987, 44(19), p.2783-2803, 46 refs.
Heymsfield, A.J.
Snow pellets, Hailstone growth, Melting, Storms.

42-1566
Radar observation of snowfall from a natural-draft cooling tower plume.
Sauvageot, H., *Journal of climate and applied meteorology*, Nov. 1987, 26(11), p.1471-1481, 8 refs.
Snowfall, Weather modification, Heat transfer, Nuclear power.

42-1567
Ice breeze mechanism for an ice divergence-convergence criterion in the marginal ice zone.
Chu, P.C., *Journal of physical oceanography*, Oct. 1987, 17(10), p.1627-1632, 16 refs.
Ice models, Ice edge, Drift, Wind (meteorology).

42-1568
Tests on snow removing operation by snowplows and trucks equipped with snowtires. [Suno taiya ni yoru josetsu sagyo ni kansuru chosa shiken],
Kokubun, M., et al, *Hokkaido Development Bureau. Proceedings (Hokkaido Kaihatsukyoku gijutsu kaigi happyo ronbunshu)*, 1983 (pub. 1984), Vol.27, p.357-368, In Japanese. 7 refs.
Ushiki, S.
Snow removal, Tires, Performance, Road maintenance, Road icing, Skid resistance, Snow compaction, Traction.
Tests to compare the effectiveness of studded tires and snow tires were performed. The feasibility of replacing studded tires with snow tires was studied with the purpose of eliminating pollution (asphalt dust due to pavement erosion) caused by the use of studded tires.

42-1569
Tests on snow blowers: snow removing mechanisms of rotary snow blowers. [Josetsu kikai ni kansuru chosa shiken: rotari josetsu kikai no josetsu kikoni kansuru chosa shiken],
Yanagisawa, Y., *Hokkaido Development Bureau. Proceedings (Hokkaido Kaihatsukyoku gijutsu kaigi happyo ronbunshu)*, 1983 (pub. 1984), Vol.27, p.1557-1564, In Japanese. 4 refs.
Augers, Snow removal, Equipment, Hydraulics, Performance, Engines.
The efficiency of rotary snow blowers was studied in terms of rotatory speeds of blower and auger, and the distance travelled by ejected snow. A hydromechanical transmission system was designed as the most suitable model for this class of snow blowers.

42-1570
Tests on an improved safety device for snow removal motor graders. [Josetsu guredar anzen kiko no kairyo ni kansuru chosa shiken],
Takino, A., et al, *Hokkaido Development Bureau. Proceedings (Hokkaido Kaihatsukyoku gijutsu kaigi happyo ronbunshu)*, 1983 (pub. 1984), Vol.27, p.1567-1576, In Japanese.
Sakai, M.
Snow removal, Equipment.

42-1571
Performance tests on a rotary snow blower (class 200PS, equipped with an automatic control device). [Rotari josetsusha (200PS kyu, jido seigyo sochi tsuki) no seino shiken ni tsuite],
Yanagisawa, Y., et al, *Hokkaido Development Bureau. Proceedings (Hokkaido Kaihatsukyoku gijutsu kaigi happyo ronbunshu)*, 1983 (pub. 1984), Vol.27, p.1577-1584, In Japanese. 1 ref.
Hirata, K.
Snow removal, Equipment, Performance.

42-1572
Performance tests on a small snowplow (Model KBR-81). [Kogata josetsusha (KBR-81 gata) no seino shiken],
Sakai, M., *Hokkaido Development Bureau. Proceedings (Hokkaido Kaihatsukyoku gijutsu kaigi happyo ronbunshu)*, 1983 (pub. 1984), Vol.27, p.1585-1594.
Traction, Snow removal, Sidewalks, Equipment, Safety, Noise (sound), Visibility.

42-1573
Tests aimed at improvement of the efficiency of snow removal from roads. [Romen seisei sagyo no koritsuka ni kansuru chosa shiken],
Itabashi, N., *Hokkaido Development Bureau. Proceedings (Hokkaido Kaihatsukyoku gijutsu kaigi happyo ronbunshu)*, 1983 (pub. 1984), Vol.27, p.1595-1606, In Japanese.
Snow removal, Road maintenance, Equipment, Motor vehicles, Performance.

42-1574
Germans crack Finland's ice. *Shipping world & shipbuilder*, Jan.-Feb. 1984, 182(4020), p.64.
Icebreakers, Design.

42-1575
Ice-going news. *Shipping world & shipbuilder*, Oct. 1987, 184(4037), p.337-338.
Icebreakers, Design, Cost analysis.

42-1576
Hovercraft for the Canadian Coast Guard. *Shipping world & shipbuilder*, Oct. 1987, 184(4037), p.338-341.
Air cushion vehicles, Ice breaking.

42-1577
Breaking the ice with Canarctic. *Shipping world & shipbuilder*, Oct. 1987, 184(4037), p.341-343.
Icebreakers, Ice navigation.

42-1578
Sea train concept from Wärtsilä. *Shipping world & shipbuilder*, Oct. 1987, 184(4037), p.343.
Ships, Icebreakers, Ice navigation.

42-1579
***Henry Larsen* Type 1200 icebreaker from Versatile Pacific.** *Shipping world & shipbuilder*, Oct. 1987, 184(4037), p.374-375.
Icebreakers, Design.

42-1580
General and applied climatology. [Obshchaia i prikladnaia klimatologiia],
Kovel', L.V., ed, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, 160p., In Russian. For selected papers see 42-1581 through 42-1586. Refs. passim.
Heat transfer, Snow cover effect, Hydraulic structures, Ice loads, Wind power generation, Icing, Ice prevention, Soil temperature.

42-1581
Design air temperatures for construction planning. [Raschetnye temperatury vozdukha dlia stroitel'nogo proektirovaniia],
Pashina, O.B., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, p.25-35, In Russian. 2 refs.
Design, Construction, Air temperature, Seasonal variations, Soil air interface, Heat transfer, Frozen ground, Climatic factors, Residential buildings, Industrial buildings, Structural analysis.

42-1582
Precise method of calculating loads on hydraulic structures. [Utochnennyĭ metod rascheta nagruzok na gidrotekhnicheskie sooruzheniia],
Semenov, IU.A., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, p.35-40, In Russian. 2 refs.
Hydraulic structures, Ice loads, Ice cover thickness, Design.

42-1583
Calculation of ice loads on elements of wind-power installations. [O raschete gololednykh nagruzok na elementy vetroenergeticheskikh silovykh ustanovok],
Zakharov, A.G., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, p.41-49, In Russian. 9 refs.
Ice loads, Wind power generation, Cold weather operation, Icing, Supercooled fog, Ice accretion, Hoarfrost, Wind velocity.

42-1584
Climatic mapping of snow cover characteristics in mountains. [O klimaticheskom kartografirovanii kharakteristik snezhnogo pokrova v gornykh raĭonakh],
Loktionova, E.M., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, p.79-91, In Russian. 6 refs.
Snow cover distribution, Mountains, Mapping, Snow surveys, Snow water equivalent, Snow line, Snow cover stability.

42-1585
Results of comparing water reserves in snow cover with the quantity of solid precipitation. [Rezul'taty sravneniia vlagozapasov v snezhnom pokrove s kolichestvom tverdykh osadkov],
Shver, Ts.A., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, p.91-96, In Russian. 6 refs.
Ul'ianova, T.N.
Microclimatology, Snow water equivalent, Snow depth, Snow density, Snow cover stability, Evaporation, Meteorological data, Condensation.

42-1586
Estimating the accuracy of calculations of the space-time variability of temperature and air in soils. [Otsenka tochnosti rascheta prostranstvenno-vremennoĭ izmenchivosti temperatury i vozdukha pochvy],
Beresneva, I.A., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1986, Vol.501, p.97-105, In Russian. 9 refs.
Microclimatology, Soil water migration, Soil temperature, Measuring instruments, Air temperature, Soil air interface, Heat transfer.

42-1587
Soil formation at the northern limit of pine biogeocenoses. [Pochvoobrazovanie na severnom predele sosnovykh biogeotsenozov],
Nikonov, V.V., Leningrad, Nauka, 1987, 141p., In Russian with abridged English table of contents enclosed. Refs. p.135-139.
Subarctic landscapes, Forest lines, Frost weathering, Podsol, Taiga, Forest soils, Soil formation, Hydrothermal processes, USSR—Kola Peninsula.

42-1588
Studies of forests by aerial and satellite methods. [Issledovanie lesov aerokosmicheskimi metodami],
Isaev, A.S., ed, Novosibirsk, Nauka, 1987, 208p., In Russian. For selected papers see 42-1589 through 42-1596. Refs. passim.
River basins, Taiga, Landscape types, Ecology, Subpolar regions, Permafrost distribution, Spaceborne photography, Photointerpretation, Geobotanical interpretation, Forest fires, Cryogenic soils, Soil erosion, Revegetation, USSR—Yenisey River, USSR—Angara River.

42-1589
Basic trends in studying forest resources of Siberia by aerial and satellite means. [Osnovnye napravleniia issledovaniĭ lesnykh resursov Sibiri s pomoshch'iu aerokosmicheskikh sredstv],
Isaev, A.S., et al, Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.3-9, In Russian.
Pleshikov, F.I.
Aerial surveys, Landscape types, Taiga, Mapping, Forest land, Geobotanical interpretation, Spaceborne photography, Photointerpretation, Subarctic landscapes.

42-1590
Remote sensing techniques of studying forest landscapes (the Angara-Yenisey area). [Issledovaniia lesnykh landshaftov distantsionnymi metodami (na primere Angaro-Eniseĭskogo regiona)],
Kalashnikov, E.N., Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.10-34, In Russian. Refs. p.31-34.
Taiga, Vegetation, Landscape types, Mapping, Permafrost distribution, Swamps, Ecology, Charts, Classifications, Subpolar regions.

42-1591
Landscape principles and technology of typologic mapping of forests using satellite and aerial survey data. [Landshaftnye printsipy i tekhnologiia lesotipologicheskogo kartografirovaniia s ispol'zovaniem materialov kosmo- i aeros"emki],
Kalashnikov, E.N., et al, Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.34-54, In Russian. Refs. p.52-54.
Pervunin, V.A., Korotkov, I.A.
Forest land, Taiga, Mapping, Photointerpretation, Classifications, Data processing, Subpolar regions.

42-1592
Studies and estimation of forest fire consequences from aerial and satellite photographs. [Ispol'zovanie aerokosmicheskikh snimkov dlia izucheniia i otsenki posledstviĭ lesnykh pozharov],
Furiaev, V.V., Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.85-98, In Russian. Refs. p.96-98.
Forest fires, Soil erosion, Revegetation, Forestry, Taiga, Cryogenic soils.

42-1593
System of using aerial-satellite photoinformation in studying soils and vegetation of western Siberia. [Sistema ispol'zovaniia aerokosmicheskoĭ fotoinformatsii pri izuchenii rastitel'nosti i pochv Zapadnoĭ Sibiri],
Gorozhankina, S.M., et al, Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.98-118, In Russian. 25 refs.
Konstantinov, V.D.
Taiga, Cryogenic soils, Spaceborne photography, Photointerpretation, Mapping, Maps, Charts.

42-1594
Monitoring forest fires. [Monitoring lesnykh pozharov],
Valendik, E.N., et al, Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.118-135, In Russian. Refs. p.134-135.
Sukhinin, A.I., Kisliakov, E.K., Khrebtov, B.A.
Taiga, Forest fires, Spacecraft, Monitors, Photointerpretation.

42-1595
Aerial and satellite methods of studying West Siberian forests. [Aerokosmicheskie metody v izuchenii lesov Zapadnoĭ Sibiri],
Sedykh, V.N., Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.157-173, In Russian. Refs. p.171-173.
Taiga, Remote sensing, Spaceborne photography, Photointerpretation, Geobotanical interpretation, Forestry.

42-1596
Hydrologic differentiation of taiga landscapes. [Gidrologicheskaia differentsiatsiia taezhnykh landshaftov],
Lebedev, A.V., Issledovanie lesov aerokosmicheskimi metodami (Studies of forests by aerial and satellite methods) edited by A.S. Isaev, Novosibirsk, Nauka, 1987, p.196-207, In Russian. 24 refs.
Taiga, Permafrost distribution, Paludification, Snow cover distribution, Snowmelt, Runoff, Landscape types, Permafrost hydrology.

42-1597
Biogeocenoses of Alpine waste lands (the case of northwestern Caucasus). [Biogeotsenozy al'piĭskikh pustosheĭ (na primere Severo-Zapadnogo Kavkaza)],
Rabotnov, T.A., Moscow, Nauka, 1987, 76p., In Russian with abridged English table of contents enclosed. Refs. p.63-74.
Alpine tundra, Deserts, Rock streams, Vegetation patterns, Lichens, Biomass, Cryogenic soils, Soil composition, Alpine landscapes, Soil chemistry.

42-1598
Physics of clouds, fog and weather modification. [Fizika oblakov, tumanov i aktivnykh vozdeĭstviĭ],
Kuzenkov, A.F., ed, *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, 120p., In Russian. For selected papers see 42-1599 through 42-1604. Refs. passim.
Khvorost'ianov, V.I., ed.
Smoke generators, Weather modification, Cloud physics, Cloud dissipation, Supercooled fog, Fog dispersal, Cloud seeding, Organic nuclei, Ice crystal nuclei, Aerosols, Ice formation, Snow crystals.

42-1599
Results of air-borne lidar observations of convective clouds modified by coarse-grained powders. [Rezul'taty lidarnykh issledovaniĭ s samoleta konvektivnykh oblakov pri aktivnykh vozdeĭstviiakh grubodispersnymi poroshkami],
Zontov, L.B., et al, *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, p.10-18, In Russian with English summary. 4 refs.
Tiabotov, A.E.
Weather modification, Cloud physics, Cloud dissipation.

42-1600
Effect of reagent dosage and wind velocity on the clearing zone evolution during ground-based dispersal of supercooled fogs. [Vliianie dozirovki reagenta i skorosti vetra na evoliutsiiu zon prosveta pri nazemnom rasseianii pereokhlazhdennykh tumanov],
Kotova, O.P., et al, *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, p.18-28, In Russian with English summary. 9 refs.
Krasnovskaia, L.I., Khvorost'ianov, V.I.
Supercooled fog, Fog dispersal, Wind factors, Turbulence.

42-1601
Lidar observations of artificial dispersal of supercooled fog. [Lidarnye issledovaniia pereokhlazhdennykh tumanov pri ikh iskusstvennom rasseianii],
Kushmatov, O.E., et al, *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, p.29-36, In Russian with English summary. 4 refs.
Tikhonov, A.P., Khristoforova, L.A.
Supercooled fog, Fog dispersal.

42-1602
Studies of ice-forming activity of some organic compounds. [Issledovanie l'doobrazuiushcheĭ aktivnosti nekotorykh organicheskikh soedineniĭ],
Nikeshina, I.V., et al, *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, p.46-54, In Russian with English summary. 7 refs.
Turov, A.V., Chesha, I.I., Shcherbina, L.S.
Weather modification, Cloud seeding, Organic nuclei, Ice formation, Ice crystal nuclei, Ice crystal structure, Aerosols, Smoke generators.

42-1603
Applicability of ground-based generators of finely dispersed ice particles for cloud seeding in Alpine areas. [K voprosu o primenenii dlia zaseva oblakov gornykh raĭonov nazemnykh generatorov melkodispersnykh chastits l'da],
Amvrosov, A.F., et al, *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, p.54-58, In Russian with English summary. 5 refs.
Vlasiuk, M.P.
Weather modification, Cloud seeding, Smoke generators, Ice nuclei, Alpine landscapes.

42-1604
Origin of nucleating particles of precipitation. [O proiskhozhdenii zarodyshevykh chastits osadkov],
Bartishvili, G.S., *Tsentral'naia aerologicheskaia observatoriia. Trudy*, 1987, Vol.164, p.74-82, In Russian with English summary. 7 refs.
Cloud seeding, Nucleating agents, Ice formation, Ice nuclei, Snow crystals.

42-1605
Welding developments for arctic structures.
Price, J.C., *CIM bulletin*, Nov. 1987, 80(907), p.95-103, 6 refs.
Welding, Offshore structures, Cold weather construction, Icebreakers, Artificial islands, Pipelines, Caissons, Temperature effects, Steel structures.

42-1606
Single-crystal electron spin resonance studies on radiation-produced species in ice Ih. Pt 1. The O radicals.
Bednarek, J., et al, *Chemical Society, London. Faraday transactions 1*, Dec. 1987, 83(12), p.3725-3735, 49 refs.
Plonka, A.
Ice crystal optics, Ice crystal structure, Gamma irradiation, Spectra, Oxygen, Radiation, Temperature effects, Heavy water, Freeze thaw cycles, Molecular structure, Ions.

42-1607
Single-crystal electron spin resonance studies on radiation-produced species in ice Ih. Pt 2. The HO2 radicals.
Bednarek, J., et al, *Chemical Society, London. Journal. Faraday transactions 1*, Dec. 1987, 83(12), p.3737-3747, 50 refs.
Plonka, A.
Ice crystal structure, Ice crystal optics, Gamma irradiation, Spectra, Molecular structure, Radiation, Temperature effects.

42-1608
Drift-ice features; Symposium on the Geological Action of Drift Ice, 1st, 1974. [Le glaciel],
Colloque international sur l'action géologique des glaces flottantes, 1-er, Ste-Foy, Quebec, Apr. 20-24, 1974, Quebec, University, [1974], 51p., Abstracts.
In English and French.
Ice scoring, Ice mechanics, Drift, Glacial deposits, Frost action, Beaches, Meetings, Marine deposits.

42-1609
Of: Overland flow wastewater treatment at Easley, S.C.
Martel, C.J., et al, *Water Pollution Control Federation. Journal*, Nov. 1986, MP 2300, p.1078-1079, Discussion of A.R. Abernathy's paper, 41-1899, and author's reply. 8 refs.
Jenkins, T.F., Abernathy, A.R.
Waste treatment, Water treatment, Land reclamation, Chemical analysis, Design.

42-1610
Application of microwave remote sensing to studies of sea ice.
Gudmandsen, P.E., *Royal Society of London. Philosophical transactions. Ser A*, 1983, 309(1508), p.433-445, Also published in: Study of the ocean and the land surface from satellites. Proceedings of a Royal Society discussion meeting held on 10 and 11 November 1982. Organized and edited by J.T. Houghton, A.H. Cook and H. Charnock, p.191-203. 23 refs.
DLC GC10.4.R4S78 1983
Sea ice distribution, Remote sensing, Microwaves, Snow cover distribution, Ice conditions, Polar regions.

42-1611
Satellite observations of polar ice fields.
Robin, G. de Q., et al, *Royal Society of London. Philosophical transactions. Ser A*, 1983, 309(1508), p.447-461, Also published in: Study of the ocean and the land surface from satellites. Proceedings of a Royal Society discussion meeting held on 10 and 11 November 1982. Organized and by J.T. Houghton, A.H. Cook and H. Charnc 5-219. 42 refs.
Drewry, D.J., Squire, V.A.
DLC GC10.4.R4S78 1983
Sea ice distribution, Remote sensing ons, Ice sheets, Ice shelves, Pack ice, bal-ance, Analysis (mathematics), nd.
This paper outlines the reasearch nee ice th knowledge of polar ice masses that could be or n provided by satellite techniques. Inland ice sheets, ice shelves and pack ice on polar oceans are discussed in separate sections. Because a satellite radar altimeter can cover wide areas of polar ice economically and rapidly, the interpretation of altimeter results is discussed in detail. Theoretical considerations are used to explain various characteristics of pulse shapes recorded over Antarctica by Seasat. Over inland ice, surface undulations cause the pulse shape to change rapidly with location, and the leading edge to migrate rapidly. Altimetry over ice shelves should be accurate to better than about 1 m and provide new methods for studying their mass balance. Nearly all sea ice returns that have been studied show a characteristic glistening quite distinct from returns from the open ocean, inland ice or ice shelves. (Auth. mod.)

42-1612
Catastrophic flooding.
Mayer, L., ed, Binghamton Symposia in Geomorphology: International series, No.18, London, Allen and Unwin, 1987, 410p., Refs. passim. For selected papers see 42-1613 through 42-1616.
Nash, D., ed.
Flooding, Glacial hydrology, Climatic changes, Stream flow, Paleoclimatology, Glaciation, Drainage.

42-1613
Observations of jökulhlaups from ice-dammed Strandline Lake, Alaska: implications for paleohydrology.
Sturm, M., et al, MP 2307, Binghamton Symposia in Geomorphology: International series, No.18, Catastrophic flooding. Edited by L. Mayer and D. Nash, London, Allen and Unwin, 1987, p.79-94, 14 refs.
Beget, J., Benson, C.
Flooding, Ice dams, Glacial lakes, Subglacial drainage, Glacial hydrology, Volume, Hydrography, Paleoclimatology, United States—Alaska—Strandline Lake.

42-1614
Glacial-lake outbursts along the mid-continent margins of the Laurentide ice-sheet.
Kehew, A.E., et al, Binghamton Symposia in Geomorphology: International series, No.18, Catastrophic flooding. Edited by L. Mayer and D. Nash, London, Allen and Unwin, 1987, p.95-120, 29 refs.
Lord, M.L.
Flooding, Glacial lakes, Glacial hydrology, Meltwater, Stream flow, Ice edge, Ice sheets, Paleoclimatology, Ice dams, Glacial deposits, Water erosion.

42-1615
Catastrophic flooding into the Great Lakes from Lake Agassiz.
Teller, J.T., et al, Binghamton Symposia in Geomorphology: International series, No.18, Catastrophic flooding. Edited by L. Mayer and D. Nash, London, Allen and Unwin, 1987, p.121-138, Refs. p.136-138.
Thorleifson, L.H.
Flooding, Glaciation, Paleoclimatology, Ice sheets, Lake water, Watersheds, Drainage, Canada—Ontario—Agassiz, Lake.

42-1616
Drainage of Lake Wisconsin near the end of the Wisconsin Glaciation.
Clayton, L., et al, Binghamton Symposia in Geomorphology: International series, No.18, Catastrophic flooding. Edited by L. Mayer and D. Nash, London, Allen and Unwin, 1987, p.139-153, 22 refs.
Attig, J.
Flooding, Drainage, Paleoclimatology, Glacial lakes, Lake water, Ice edge, Ice conditions, Ice dams, Sediments.

42-1617
Accelerator offers freezing protection. *Concrete construction,* Mar. 1987, 32(3), p.309-311.
Winter concreting, Concrete freezing, Concrete admixtures, Antifreezes, Concrete strength, Damage, Countermeasures, Cold weather construction.

42-1618
How to prevent frost heave.
Wallace, M., *Concrete construction,* Apr. 1987, 32(4), p.369-372, 6 refs.
Frost heave, Frost penetration, Subgrade soils, Water content, Countermeasures, Ice lenses, Frost resistance, Temperature effects, Soil freezing.

42-1619
Don't let deicers scale your concrete.
Wallace, M., *Concrete construction,* Nov. 1987, 32(11), p.972.
Winter concreting, Concrete strength, Air entrainment, Concrete aggregates, Freeze thaw cycles, Damage, Countermeasures, Water cement ratio, Concrete freezing, Concrete curing.

42-1620
Role of CaCO3 compensation in the glacial to interglacial atmospheric CO2 change.
Broecker, W.S., et al, *Global biogeochemical cycles,* Mar. 1987, 1(1), p.15-29, 17 refs.
Peng, T.H.
Carbon dioxide, Paleoclimatology, Ice cores, Sea water, Water chemistry, Atmospheric composition.
The only viable explanations put forth to date for the glacial to interglacial change in atmospheric CO2 content suggested from measurements of the CO2 content of gas extracted from ice cores involve changes in the ocean's nutrient cycles. Evidence from deep sea sediments suggests that these changes are compensated on the time scale of a few thousand years by reductions or increases in amount of CaCO3 accumulating in deep sea sediments. This compensation process has two important consequences. First, it significantly increases the magnitude of the CO2 change per unit of nutrient forcing. Second, it causes a delay in the response of the atmospheric CO2 change. While the first of these consequences is a boon to those seeking to explain the CO2 change, the second may prove to be a curse. The ice core CO2 record shows no evidence of a significant lag between the CO2 response and the polar warming. (Auth. mod.)

42-1621
Rauma-Repola in the Antarctic. *Shipping world and shipbuilder,* Jan./Feb. 1987, 183(4030), p.27-29.
Engines, Icebreakers, Ice navigation.
It is reported that the Soviet Union has ordered from Rauma-Repola's Rauma Shipyard the first vessel ever specifically designed for expeditions into antarctic regions. The delivery of the vessel is scheduled for late summer 1987. The design of the ship, and its functions, are described. The construction materials, machinery, and shape of the ship, designed for ice-going and tested in ice model tests, are discussed.

42-1622
Landscape-geographic provisions for complex problems of Siberia. [Landshaftno-geograficheskoe obespechenie kompleksnykh problem Sibiri],
Mikheev, V.S., Novosibirsk, Nauka, 1987, 207p., In Russian with abridged English table of contents enclosed. Refs. p.198-206.
Landscape types, Alpine landscapes, Alpine tundra, Economic development, Deserts, Permafrost distribution, Taiga, Human factors, Surveys, Environmental protection, Mapping, Charts, Baykal Amur railroad.

42-1623
Design of buildings and structures for seismic stability. [Raschet zdanii i sooruzhenii na seismostoikost'],
Rasskazovskii, V.T., ed, Tashkent, Fan, 1985, 191p., In Russian. For selected paper see 42-1624. 6 refs.
Earthquakes, Buildings, Foundations, Hydraulic structures, Models, Ice cover thickness, Ice strength, Rheology, Mathematical models.

42-1624
Allowing for energy dissipation in an ice cover, when calculating oscillations of vertical hydraulic structures in winter. [Uchet dissipatsii energii v ledianom pokrove pri raschete kolebanii vertikal'nykh konstruktsii gidrosooruzhenii v zimnii period],
Shames, M.P., Raschet zdanii i sooruzhenii na seismostoikost' (Design of buildings and structures for seismic stability) edited by V.T. Rasskazovskii, Tashkent, Fan, 1985, p.174-181, In Russian. 6 refs.
Models, Rheology, Earthquakes, Hydraulic structures, Oscillations, Wave propagation, Ice physics, Ice cover.

42-1625
Structural design and erection of earth dams. [Konstruktsii i tekhnologiia vozvedeniia gruntovykh plotin],
Pavchich, M.P., ed, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.189, 103p., In Russian with English summary. For selected papers see 42-1626 through 42-1628. Refs. passim.
Boravskaia, E.N., ed.
Hydraulic structures, Electric power, Earth dams, Rock fills, Permafrost beneath structures, Winter concreting, Soil compaction, Measuring instruments, Clay soils, Embankments, Waste disposal.

42-1626
Device for determining consolidation coefficient of clay soils. [Pribor dlia opredeleniia koeffitsienta konsolidatsii glinistykh gruntov],
Gorelik, L.V., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.189, p.21-24, In Russian. 3 refs.
Grushko, I.V.
Earth dams, Clay soils, Permeability, Soil compaction, Measuring instruments, Waterproofing.

42-1627
Influence of the cooling regime of a bituminous-concrete diaphragm in an earth dam, under severe climatic conditions. [Vliianie rezhima okhlazhdeniia asfal'tobetona na skhemu vozvedeniia diafragmy gruntovoi plotiny v usloviiakh surovogo klimata],
Gavrilov, S.V., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.189, p.35-39, In Russian. 2 refs.
Hydraulic structures, Earth dams, Bituminous concretes, Cooling rate, Winter concreting, Charts.

42-1628
Construction of ash dumps for thermal power plants at sub-zero air temperatures. [Osobennosti vozvedeniia zolootvalov TES pri otritsatel'nykh temperaturakh vozdukha],
Panteleev, V.G., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.189, p.51-55, In Russian. 9 refs.
Zholnerovich, V.G., Ogarkov, A.A., Ivanov, A.A.
Electric power, Waste disposal, Tailings, Permafrost beneath structures, Embankments, Drainage.

42-1629
Perennially frozen eolian deposits in the eastern Arctic and the Subarctic. [Kriogenno-eolovye otlozheniia Vostochnoi Arktiki i Subarktiki],
Tomirdiaro, S.V., et al, Moscow, Nauka, 1987, 198p., In Russian. Refs. p.193-197.
Chernen'kii, B.I.
Cryogenic soils, Soil composition, Loess, Active layer, Permafrost structure, Lithology, Eolian soils, Cryogenic structures, Ice wedges, Edoma complex, Polar regions.

42-1630
Ice thermal conditions and ice technology. [Ledotermika i ledotekhnika],
Liapin, V.E., ed, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, 85p., In Russian. For individual papers see 42-1631 through 42-1643. Refs. passim.
Zelenova, M.V., ed.
Mathematical models, Hydraulic structures, Ice formation, Ice mechanics, Ice control, Ponds, Icebound lakes, Electric power, Cold weather operation, Cold weather construction, Waste disposal.

42-1631
Possibility of controlling ice thermal regime in tail races of high-head hydraulic power plants. [Vozmozhnosti regulirovaniia ledotermicheskogo rezhima nizhnikh b'efov vysokonapornykh GES],
Liapin, V.E., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.5-13, In Russian. 8 refs.
Razgovorova, E.L., Tregub, G.A., Shatalina, I.N.
Hydraulic structures, Ice formation, Ice control, Electric power.

42-1632
Thermal regime of ice in tail races of hydroelectric power plants during heavy snowfall. [Ledotermicheskii rezhim nizhnikh b'efov GES v usloviiakh intensivnykh snegopadov],
Tregub, G.A., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.13-18, In Russian. 8 refs.
Hydraulic structures, Ponds, Snowstorms, Ice conditions, Electric power.

42-1633
Calculating the ice and thermal regimes in penstocks of pumped storage power plants. [Metodika rascheta termicheskogo i ledovogo rezhimov vodovodov GAES],
Bezmel'nitsyna, O.V., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.18-26, In Russian. 6 refs.
Nikolaeva, E.I., Shatalina, I.N.
Hydraulic structures, Ponds, Cold weather operation, Electric power.

42-1634
Determining the scale factor for hydraulic simulation of ice particle motion in a water flow. [Opredelenie masshtabnogo koeffitsienta pri gidravlicheskom modelirovanii dvizheniia chastits l'da v potoke zhidkosti],
Veksler, A.B., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.26-31, In Russian. 4 refs.
Genkin, Z.A.
Mathematical models, Stream flow, Floating ice, Ice mechanics, Particle size distribution.

42-1635
Ice breaking on rivers by choppy waves. [Razrushenie ledianogo pokrova rek preryvnymi volnami],
Drobakhin, V.P., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.31-37, In Russian. 5 refs.
Icebound rivers, Water waves, Ice breakup, Ice floes, Ice strength.

42-1636
Determination of water levels in tail races of hydroelectric power plants in the presence of ice. [Opredelenie urovnei vody v nizhnem b'efe GES pri nalichii ledianogo pokrova],
Sokolov, I.N., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.37-40, In Russian. 4 refs.
Kovalevskii, S.I.
Ponds, Icebound lakes, Water level, Flood control, Ice conditions, Electric power.

42-1637
Specific features of ice regime in the Dnepr-Bug Water Management Project and protection of its structures from ice damage. [Osobennosti ledovogo rezhima Dnepro-Bugskogo gidrouzla i rekomendatsii po predotvrashcheniiu vozdeistviia l'da na ego sooruzheniia],
Karnovich, V.N., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.40-46, In Russian. 4 refs.
Sokolov, I.N., Sudakova, N.V.
Flooding, River basins, Hydraulic structures, Ice loads, Ice conditions, Valleys, Electric power.

42-1638
Thermal design of slurry flows on the above-water slope of ash dumps of thermal power plants. [Termicheskii raschet potokov pul'py na nadvodnom otkose namyva na zolootvalakh teplovykh elektrostantsii],
Panteleev, V.G., et al, *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.47-54, In Russian. 8 refs.
Ogarkov, A.A.
Electric power, Hydraulic structures, Waste disposal, Tailings, Cold weather construction, Thermal regime.

42-1639
Reinforcement of ice with disperse and fibrous glass materials. [Uprochnenie l'da dispersnymi i voloknistymi steklomaterialami],
Vasil'ev, N.K., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.54-58, In Russian. 12 refs.
Ice (construction material).

42-1640
Studying physical and thermophysical properties of ashes from coal in the Pechora basin. [Issledovanie fizicheskikh i teplofizicheskikh svoĭstv merzlogo zoloshlakovogo materiala pechorskogo uglia],
Korytova, I.V., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.58-65, In Russian. 10 refs.
Coal, Dusting, Frost penetration, Frozen fines, Water content, Thermal properties, Physical properties.

42-1641
Freeze-thaw of massive ground induced by air flow. [Promerzanie-ottaivanie gruntovogo massiva pod vozdeĭstviem vozdushnogo potoka],
Mukhetdinov, N.A., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.65-70, In Russian. 9 refs.
Soil freezing, Frost penetration, Moisture transfer, Heat transfer, Phase transformations, Stefan problem.

42-1642
Theoretical analysis of free convection of air in rock fills. [Analiticheskiĭ raschet svobodnoĭ konvektsii vozdukha v kamennoĭ nabroske],
Gorokhov, E.N., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.71-73, In Russian. 4 refs.
Fevralev, A.B.
Hydraulic structures, Rock fills, Dams, Air flow, Convection.

42-1643
Calculating thermal regime of rock-earth dams allowing for the accumulation of sublimated ice. [Metod rascheta temperaturnogo rezhima kammenno-zemlianoĭ plotiny s uchetom sublimatsionnogo ledonakopleniia v nabroske],
Gorokhov, E.N., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.188, p.74-80, In Russian. 12 refs.
Earth dams, Rock fills, Thermal regime, Ice formation, Sublimation, Analysis (mathematics).

42-1644
Motion and structural response of a hydroelastic semi-submersible model to waves and ice impacts.
El-Tahan, H., et al, *Journal of offshore mechanics and arctic engineering,* Feb. 1987, 109(1), p.35-42, 40 refs.
Arockiasamy, M., Swamidas, A.S.J.
Offshore structures, Ice loads, Ocean waves, Impact strength, Ice pressure, Models, Dynamic properties, Elastic properties, Tests.

42-1645
Ice floe impact with sloping structures.
Luk, C.H., *Journal of offshore mechanics and arctic engineering,* Feb. 1987, 109(1), p.75-84, 5 refs.
Ice loads, Offshore structures, Ice floes, Wave propagation, Impact strength, Elastic waves, Flexural strength, Analysis (mathematics).

42-1646
Distribution of ice pressure acting on offshore pile structure and the failure mechanics of ice sheet.
Tanaka, S., et al, *Journal of offshore mechanics and arctic engineering,* Feb. 1987, 109(1), p.85-92, 11 refs.
Saeki, H., Ono, T.
Ice pressure, Offshore structures, Pile structures, Strains, Ice sheets, Distribution, Stresses, Ice cover thickness, Tests.

42-1647
Apparent free surface method for determining the transient freezing around a buried pipe in a semi-infinite region.
Weinbaum, S., et al, *Journal of offshore mechanics and arctic engineering,* Feb. 1987, 109(1), p.93-101, 17 refs.
Zhang, G.-P., Jiji, L.M.
Freeze thaw cycles, Underground pipelines, Boundary value problems, Analysis (mathematics).

42-1648
Validation and quantitative assessment of the deterioration mechanisms of arctic icebergs.
El-Tahan, M., et al, *Journal of offshore mechanics and arctic engineering,* Feb. 1987, 109(1), p.102-108, 24 refs.
Venkatesh, S., El-Tahan, H.
Ice deterioration, Icebergs, Mass balance, Ice erosion, Ocean waves, Calving, Models, Melting.

42-1649
Reception of remote sensing satellites in Australian Antarctic Territory, a technical feasibility study: final report.
Jeremy, R., et al, *Australia. Commonwealth Scientific and Industrial Research Organization. Office of Space Science and Applications. COSSA publication,* Jan. 1987, No.010, 58p., For selected paper (Appendix 6) see 42-1650 or C-36810. 7 refs.
McCracken, K.G.
Research projects, Data processing, Spaceborne photography, Mapping, Sea ice, Cost analysis, Site surveys.
This report covers a technical and cost study of the facilities which would be required to receive at an Australian antarctic station, image and other data from the remote sensing satellites LANDSAT, SPOT and ERS-1. Subjects addressed in the study are: choice between Mawson, Davis, and Casey as the location for a receiving station; operational, scientific, and other uses (e.g. mapping) to which received data could be applied; data accumulation volumes, on-site processing, and potential transmission requirements; technical considerations (such as antenna size required); cost estimates for station acquisition and installation; operating cost estimates. (Auth.)

42-1650
Benefits of a receiving station in AAT to Australia's antarctic glaciological research.
Allison, I., et al, *Australia. Commonwealth Scientific and Industrial Research Organization. Office of Space Science and Applications. COSSA publication,* Jan. 1987, No.010, p.48-56, 18 refs.
Young, N.W.
Research projects, Sea ice, Ice sheets, Spaceborne photography.
In support of benefits to be gained from establishing the satellite data receiving station, the huge size (more than 4 million sq km) of the area to be surveyed is pointed out. Other countries are experiencing success and acquiring considerable knowledge of other areas under glaciological surveillance. To go forward with glaciological research in AAT requires the use of the data remotely sensed by satellite-borne equipment and the amount of data generated in this manner requires a direct readout and processing capability in Antarctica. The types of data expected, methods of obtaining data, and the types of satellites carrying the sensors are discussed.

42-1651
Effects of water and ice layers on the scattering properties of diffuse reflectors.
Jezek, K.C., et al, *Applied optics,* Dec. 1, 1987, 26(23), MP 2301, p.5143-5147, 7 refs.
Koh, G.
Ice optics, Reflectivity, Scattering, Diffusion.

42-1652
Automatic measurements of vertical ocean heat flux and ice mass balance.
Untersteiner, U., et al, *Washington. University. Applied Physics Laboratory. Report,* Feb. 1984, APL-UW-2-84, 17p. ADA-172 560/5/XAB.
Thorndike, A.S.
Sea ice distribution, Mass balance, Heat transfer, Sea water, Floating ice, Boundary layer, Thermistors, Ice melting, Thermodynamics, Ice pressure.

42-1653
Eastern-western Arctic sea ice analysis, 1985.
U.S. Naval Polar Oceanography Center, Washington, D.C., 1985, 110p. ADA-172 722/1/XAB.
Sea ice distribution, Remote sensing, Ice conditions, Charts, Maps, Seasonal variations, Arctic Ocean, Great Lakes.

42-1654
Marine environmental assessment: Chesapeake Bay, December 1985-February 1986.
Kelly, K.L., et al, Gloucester Point, VA, Chesapeake Research Consortium, Inc., 1986, 40p., PB87-129 458/XAB, Also published as Virginia Sea Grant Coll. Program, Blacksburg, report No.VSG-86-03A.
Bashore, T.L., McDonald, K.L.
Sea ice distribution, Ice conditions, Ice forecasting, Oceanography, Climatic factors, Marine biology, Meteorological data, Marine transportation, Environmental impact.

42-1655
Airphoto mapping of coarse tills. [Geobildtolkning av grova moranerj],
Viberg, L., *Sweden. Statens geotekniska institutet. Rapport,* 1984, SGI-23, 87p., PB87-125 571/XAB, In Swedish.
Mapping, Glacial deposits, Moraines, Roads, Construction materials, Aerial surveys, Photointerpretation, Road maintenance, Sweden.

42-1656
Field and laboratory study on the use of geotextiles and related products to bridge thermokarsts.
Kinney, T.C., *Alaska. Dept. of Transportation and Public Facilities. Report,* May 1985, FHWA/AK/RD85/31, 140p. PB87-122 032/XAB.
Construction materials, Bridges, Thermokarst, Freeze thaw cycles, Soil stabilization, Mathematical models, Tests, Excavation, Embankments, United States—Alaska.

42-1657
Evaluation of snowplowable marker installation.
Agent, K.R., et al, *U.S. Federal Highway Administration. Kentucky Transportation Research Program, Lexington. Report,* June 1986, UKTRP-86-16, 57p. PB87-130 928.
Pigman, J.G.
Markers, Snow cover effect, Pavements, Road maintenance, Engineering, Reflectivity.

42-1658
Simulation of multistatic and backscattering cross sections for airborne radar.
Biggs, A.W., Huntsville, Alabama University, July 1986, 11p. N87-18757/1/XAB.
Airborne radar, Sea ice distribution, Glacier ice, Snow cover distribution, Backscattering, Computer programs, Vegetation, Topographic features, Oceans, Surface waters, Scattering.

42-1659
Shuttle imaging radar—C science plan.
California. Institute of Technology, Pasadena. Jet Propulsion Laboratory, *U.S. National Aeronautics and Space Administration. Contractor report,* Sep. 1, 1986, NASA-CR-180241, 180p. JPL-PUB-86-29, N87-18697/9/XAB.
Snow cover distribution, Geomorphology, Landforms, Erosion, Weathering, Computer programs, Polarization (waves), Mapping, Vegetation, Oceanography, Radar echoes.

42-1660
Self-contained electronic thermometers for field measurements. [Avtonomnyĭ izmeritel' temperatury dlia naturnykh issledovaniĭ],
Sakharov, G.G., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.190, Avtomatizatsiia izmerenii v issledovaniiakh po gidrotekhnike (Automation of measurements in hydraulic engineering) edited by L.IA. Dubovik and R.N. Tinazova, p.36-38, In Russian.
Voronov, G.G., Sergeeva, E.S.
Temperature measurement, Measuring instruments, Hydraulic structures, Cold weather construction.

42-1661
Design studies of thermal cracking resistance of concrete slabs in stilling basins of the Boguchary Hydroelectric Development. [Raschetnye issledovaniia temperaturnoĭ treshchinostoĭkosti betonnykh plit vodobo'nogo kolodtsa Boguchanskogo gidrouzla],
Markevich, T.G., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.191, Prochnost' i ustoĭchivost' betonnykh i zhelezobetonnykh konstruktsiĭ GES, TES i AES (Strength and stability of concrete and reinforced concrete structures of hydroelectric, thermal and atomic power plants) edited by A.A. Khrapkov and R.N. Tinazova, p.23-29, In Russian. 9 refs.
Concrete structures, Hydraulic structures, Frost resistance, Concrete strength, Design.

42-1662
Hot water heating of concrete using the repeated cementation system. [Gidroobogrev betona s ispol'zovaniem sistemy povtornoĭ tsementatsii],
Paromova, G.F., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.191, Prochnost' i ustoĭchivost' betonnykh i zhelezobetonnykh konstruktsiĭ GES, TES i AES (Strength and stability of concrete and reinforced concrete structures of hydroelectric, thermal and atomic power plants) edited by A.A. Khrapkov and R.N. Tinazova, p.51-54, In Russian. 5 refs.
Skokov, V.G., Sulimov, V.S.
Concrete structures, Joints (junctions), Grouting, Concrete admixtures, Concrete heating.

42-1663
Controlling temperature regime of water bodies in winter. [Regulirovanie temperaturnogo rezhima vodoema v zimnee vremia],
Vasil'ev, N.K., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.192, Sistemy vodosnabzheniia teplovykh i atomnykh elektrostantsiĭ (Water-supply systems of thermal and atomic power plants) edited by I.I. Makarov and L.S. Osnovikova, p.37-43, In Russian. 7 refs.
Vasil'eva, I.M., Shatalina, I.N.
Electric power, Water storage, Lake water, Cooling, Ecology, Environmental protection, Artificial snow, Water temperature, Temperature control, Snow (construction material).

42-1664
Comment on 'Sea-ice and the antarctic winter circulation: a numerical experiment' by J.F.B. Mitchell and T.S. Hills (October 1986, 112, 953-969).
Simmonds, I., et al, *Royal Meteorological Society, London. Quarterly journal,* Oct. 1987, 113(478), p.1396-1403, 8 refs. Includes reply by Mitchell and Hills. For the article being commented on see 41-1474 (I-34782).
Dix, M., Mitchell, J.F.B., Hills, T.S.
Atmospheric pressure, Sea ice, Ice cover effect, Mathematical models.
In the original article an experiment was conducted by Mitchell and Hills to test the sensitivity of a general circulation model to changes in antarctic sea ice extent. The results were in good agreement with those of Simmonds except in the sea level pressure parameter. In the present comment and reply the sea level pressure disagreement continues and is discussed at some length.

42-1665
Estimation of frost resistance of morainal loam. [Otsenka morozoopasnosti morennogo suglinka],
Golli, O.R., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.193, Osnovaniia i fundamenty gidrotekhnicheskikh i energeticheskikh sooruzheniĭ (Bases and foundations of hydraulic and electric power structures) edited by D.D. Sapegin and T.M. Boravskaia, p.46-53, In Russian. 14 refs.
Buildings, Foundations, Seasonal freeze thaw, Loams, Frost resistance, Frost heave, Bearing strength.

42-1666
Specific features of compiling a geothermophysical model for predicting geocryological conditions related to hydraulic structures. [Osobennosti postroeniia geoteplofizicheskoĭ modeli dlia prognozirovaniia geokriologicheskikh uslovĭĭ v sviazi s gidrotekhnicheskim stroitel'stvom],
Krivonogova, N.F., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.193, Osnovaniia i fundamenty gidrotekhnicheskikh i energeticheskikh sooruzheniĭ (Bases and foundations of hydraulic and electric power structures) edited by D.D. Sapegin and T.M. Boravskaia, p.62-69, In Russian. 8 refs.
Hydraulic structures, Permafrost beneath structures, Permafrost thermal properties, Permafrost forecasting, Models.

42-1667
Using the seismic survey technique in studying weathering of frozen rock foundations. [Izuchenie zony vyvetrivaniia merzlykh skal'nykh osnovaniĭ metodom seĭsmorazvedki],
Voronkov, O.K., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.193, Osnovaniia i fundamenty gidrotekhnicheskikh i energeticheskikh sooruzheniĭ (Bases and foundations of hydraulic and electric power structures) edited by D.D. Sapegin and T.M. Boravskaia, p.69-79, In Russian. 9 refs.
Kuntsevich, S.P.
Buildings, Foundations, Frozen ground strength, Frozen rocks, Weathering, Seismic surveys.

42-1668
Changes in the intensity of frost weathering processes with depth. [Izmenenie intensivnosti protsessov moroznogo vyvetrivaniia s glubinoĭ],
Ushakova, L.F., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.193, Osnovaniia i fundamenty gidrotekhnicheskikh i energeticheskikh sooruzheniĭ (Bases and foundations of hydraulic and electric power structures) edited by D.D. Sapegin and T.M. Boravskaia, p.79-82, In Russian. 6 refs.
Frost weathering, Frozen rocks, Frost shattering, Frost penetration, Freeze thaw cycles, Active layer, Experimentation.

42-1669
Temperature regime of massive concrete structures built of rolled-concrete blocks at subzero air temperatures. [Temperaturnyĭ rezhim betonnogo massiva vozvodimogo blokami iz ukatannogo betona pri otritsatel'nykh temperaturakh vozdukha],
Ginzburg, S.M., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.194, Nadezhnost' betonnykh i zhelezobetonnykh energeticheskikh sooruzheniĭ (Reliability of concrete and reinforced-concrete electric power structures) edited by A.V. Karavaev and E.N. Boravskaia, p.44-50, In Russian. 3 refs.
Ovchinnikova, T.T., Sheĭnker, N.IA.
Winter concreting, Concrete placing, Concrete hardening, Temperature control, Concrete freezing.

42-1670
Studies of long-range resistance of frozen concrete to compression. [Issledovanie dolgovremennogo soprotivleniia Rd zamorozhennogo betona pri szhatiĭ],
Logunova, V.A., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.194, Nadezhnost' betonnykh i zhelezobetonnykh energeticheskikh sooruzheniĭ (Reliability of concrete and reinforced concrete electric power structures) edited by A.V. Karavaev and E.M. Boravskaia, p.84-87, In Russian. 3 refs.
Mikhalevskaia, I.V., Filippovich, I.N.
Winter concreting, Concrete freezing, Compressive properties, Tensile properties, Concrete strength.

42-1671
Iceberg sightings during the Chilean SIBEX-Phase II cruise in the Bransfield Strait, Antarctica, 1985.
Schlatter, R., *Santiago de Chile. Instituto Antártico Chileno. Serie científica,* 1986, No.35, p.65-69, 5 refs.
Icebergs, Sea ice distribution, Antarctica—Bransfield Strait.
For Spanish version and abstract see F-35274 or 42-2812.

42-1672
Assessing the usable life of an antarctic station.
Hatcher, G.P., *Antarctic journal of the United States,* Dec. 1986, 21(4), p.6-9.
Cold weather construction, Structural analysis, Safety, Antarctica—Amundsen-Scott Station.
When to divert substantial funding from other projects and needs to build new facilities is a difficult decision. Such a decision-making situation is being anticipated with regard to Amundsen-Scott Station at the geographic south pole. The five factors affecting this decision are now being considered by the Naval Civil Engineering Laboratory. These factors are structural safety, operational safety, required operational capability, habitability standards, and annual costs. Preliminary assessment of the dome structure indicated that no structural safety problem will develop before the other four areas contribute more significant problems. If the other four areas were analyzed, a time for replacing the present station could be determined.

42-1673
Nature and mechanism of clay swelling. [Priroda i mekhanizm nabukhaniia glin],
Osipov, V.I., et al, *Inzhenernaia geologiia,* Sep.-Oct. 1987, No.5, p.18-27, In Russian. 9 refs.
Babak, V.G.
Clays, Models, Clay soils, Clay minerals, Rheology, Soil water migration, Swelling.

42-1674
Seismicity as one of the basic factors for mass movement activation in the Baykal area. [Seĭsmichnost' kak odin iz osnovnykh faktorov aktivizatsii sklonovykh protsessov v Pribaĭkal'e],
Makarov, S.A., *Inzhenernaia geologiia,* Sep.-Oct. 1987, No.5, p.53-57, In Russian. 16 refs.
Slope processes, Mass movements (geology), Earthquakes, Landslides, Rock streams, Soil creep, Soil freezing, Frost penetration, Freeze thaw cycles, USSR—Baykal Lake.

42-1675
Studying phase composition of moisture in frozen grounds by a modified thermometric method. [Issledovanie fazovogo sostava vlagi v merzlykh gruntakh modifitsirovannym teplometricheskim metodom],
Danielian, IU.S., et al, *Inzhenernaia geologiia,* Sep.-Oct. 1987, No.5, p.119-125, In Russian. 4 refs.
Kudriavtsev, E.A., IAnitskiĭ, P.A.
Permafrost hydrology, Soil water migration, Unfrozen water content, Phase transformations.

42-1676
Determining frost heave of freezing peat. [Opredelenie pucheniia promerzaiushchego torfa],
Kliuev, P.I., et al, *Inzhenernaia geologiia,* Sep.-Oct. 1987, No.5, p.126-129, In Russian. 14 refs.
Gevorkian, S.G., Zinov'ev, M.L., Zinov'eva, G.V.
Organic soils, Peat, Frost penetration, Soil freezing, Frost heave, Soil water migration, Phase transformations.

42-1677
Frost resistance of concrete in its early stages. [Morozostoĭkost' betona v rannem vozraste],
Sudakov, V.b., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.195, Dolgovechnost' i prochnost' betona i betonnykh sooruzheniĭ (Service life and strength of concrete and concrete structures) edited by V.B. Sudakov and L.S. Osnovikova, p.22-27, In Russian. 2 refs.
Karysheva, V.A.
Winter concreting, Concrete placing, Concrete hardening, Frost resistance, Freeze thaw tests, Concrete strength.

42-1678
Increasing the service life of massive hydraulic structures built of concrete in freezing weather. [Povyshenie dolgovechnosti massivnykh gidrotekhnicheskikh sooruzheniĭ betoniruemykh v zimnikh usloviiakh],
Matiushin, V.M., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.195, Dolgovechnost' i prochnost' betona i betonnykh sooruzheniĭ (Service life and strength of concrete and concrete structures) edited by V.B. Sudakov and L.S. Osnovikova, p.33-37, In Russian. 9 refs.
Concrete structures, Hydraulic structures, Winter concreting, Concrete hardening, Concrete freezing, Frost resistance, Concrete strength.

42-1679
Frost resistance of air-entrained concrete made of fine aggregates of different grain sizes. [Morozostoĭkost' betonov s vovlechennym vozdukhom na melkom zapolnitele raznoĭ krupnosti],
Bel', A.A., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.195, Dolgovechnost' i prochnost' betona i betonnykh sooruzheniĭ (Service life and strength of concrete and concrete structures) edited by V.B. Sudakov and L.S. Osnovikova, p.37-41, In Russian. 2 refs.
Bertov, V.M., Goriacheva, N.A.
Winter concreting, Concrete aggregates, Concrete admixtures, Air entrainment, Frost resistance, Concrete hardening, Concrete strength.

42-1680
Properties of concrete mixes and concretes with a higher content of alcohol-sulfite lye. [Svoĭstva betonnykh smeseĭ i betonov s povyshennym soderzhaniem SDB],
Morozova, G.V., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.195, Dolgovechnost' i prochnost' betona i betonnykh sooruzheniĭ (Service life and strength of concrete and concrete structures) edited by V.B. Sudakov and L.S. Osnovikova, p.41-47, In Russian. 11 refs.
Kostyria, G.Z., Shchinova, IU.A.
Winter concreting, Concrete aggregates, Concrete admixtures, Cements, Concrete strength, Frost resistance, Air entrainment, Tests, Laboratory techniques.

42-1681
Durability of concrete containing surfactants depending on the mineral and material composition of cement. [Zavisimost' dolgovechnosti betona s dobavkami PAV ot mineralogicheskogo i veshchestvennogo sostava tsementa],
Miklashevich, N.V., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia,* 1986, Vol.195, Dolgovechnost' i prochnost' betona i betonnykh sooruzheniĭ (Service life and strength of concrete and concrete structures) edited by V.B. Sudakov and L.S. Osnovikova, p.47-50, In Russian. 3 refs.
Cement admixtures, Concrete aggregates, Cements, Concrete admixtures, Surfactants, Concrete strength, Frost resistance, Composition, Freeze thaw cycles, Laboratory techniques.

42-1682
Sand-cement mortars with superplasticizers for pressure grouting. ¿In"ektsionnye tsementno-peschanye rastvory s dobavkami superplastifikatorov¿,
Kudinov, V.A., *Leningrad. Vsesoiuznyi nauchno-issledovatel'skii institut gidrotekhniki. Izvestiia,* 1986, Vol.195, Dolgovechnost' i prochnost' betona i betonnykh sooruzhenii (Service life and strength of concrete and concrete structures) edited by V.B. Sudakov and L.S. Osnovikova, p.82-88, In Russian. 22 refs.
Cements, Mortars, Grouting, Surfactants, Cement admixtures.

42-1683
Glacial geomorphology.
Gemmell, J.C., *Progress in physical geography,* Sep. 1986, 10(3), p.446-453, 26 refs.
Geomorphology, Glacial geology, Glacial hydrology, Meltwater, Glacier surges, Basal sliding.

42-1684
Weathering.
Whalley, W.B., et al, *Progress in physical geography,* Sep. 1987, 11(3), p.357-369, 83 refs.
McGreevy, J.P.
Frost weathering, Erosion, Periglacial processes.

42-1685
Chemical composition of hoarfrost, rime and snow during a winter inversion in Utah, U.S.A.
Cerling, T.E., et al, *Water, air, and soil pollution,* Oct. 1987, 35(3-4), p.373-379, 17 refs.
Alexander, A.J.
Snow composition, Hoarfrost, Air pollution, Temperature inversions.

42-1686
Integrated system for land navigation.
McMillan, J.C., *Navigation,* Spring 1987, 34(1), p.43-63, 3 refs.
Navigation.

42-1687
500 m experimental range for propagation studies at millimetre, infrared and optical wavelengths.
Gibbins, C.J., et al, *Institution of Electronic and Radio Engineers. Journal,* Sep.-Oct. 1987, 57(5), p.227-234, 11 refs.
Wave propagation, Attenuation, Snowfall, Snow optics, Fog.

42-1688
Proceedings.
International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987, MP 2302, New York, American Society of Mechanical Engineers, 1987, 270p., Refs. passim. For selected papers see 42-1689 through 42-1716.
Cheng, K.C., ed, Lunardini, V.J., ed, Seki, N., ed.
Heat transfer, Ice formation, Ice melting, Soil freezing, Icing, Frost heave, Phase transformations, Ice water interface, Snow melting, Cold weather construction, Mathematical models.

42-1689
Ground freezing and frost heave—a review.
Nixon, J.F., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.1-10, 51 refs.
Frost heave, Soil freezing, Frost penetration, Heat transfer, Underground pipelines, Forecasting, Mass transfer, Ice lenses, Capillary ice, Hydrodynamics, Engineering, Analysis (mathematics).

42-1690
Evolution of frazil ice in rivers and streams: research and control.
Daly, S.F., MP 2303, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.11-16, 35 refs.
Frazil ice, Ice control, Turbulent flow, Ice formation, Streams, Freezeup, Heat transfer, Ice crystals, River ice, Ice physics, Ice mechanics.
This paper presents a selective overview of the research into frazil ice. The development of theory, instrumentation, and control structures has not proceeded on parallel course for all stages of frazil evolution. The earliest, dynamic stage of frazil formation is probably the best described, yet there has as yet been no application of this theory to a practical situation. A fundamental understanding of frazil formation could lead to means of disrupting the formation, such as by artificial seedings, modification of the fluid turbulence, etc. The development of instrumentation, has increased our ability to view and sample frazil, but as yet has not provided much benefit for the design and siting of ice control structures. To date, the successful use of ice control structures relies heavily on the insight of experienced field engineers. Theory or instrumentation has not made their job easier, but the potential is large. A major task now is the synthesis of existing theory and instrumentation for application in ice control.

42-1691
Recent progress in the incorporation of convective heat transfer into cylindrical ice accretion models.
Lozowski, E.P., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.17-24, 26 refs.
Gates, E.M., Makkonen, L.
Icing, Ice models, Ice accretion, Heat transfer, Ice solid interface, Convection, Analysis (mathematics), Unfrozen water content.

42-1692
Freezing and melting characteristics in internal flow.
Fukusako, S., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.25-38, 82 refs.
Seki, N.
Freezing, Ice melting, Water flow, Ice formation, Turbulent flow, Phase transformations, Convection, Meltwater.

42-1693
Recent advances in the study of formation of ice-band structure in water-flow pipe.
Hirata, T., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.39-45, 12 refs.
Pipeline freezing, Water pipes, Ice water interface, Heat transfer, Water flow, Ice cover thickness, Ice formation, Analysis (mathematics).

42-1694
Approximate solutions to Neumann problem.
Zarling, J.P., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.47-54, 15 refs.
Freeze thaw cycles, Mathematical models, Heat transfer, Frost penetration, Phase transformations, Thaw depth.

42-1695
Some analytical methods for conduction heat transfer with freezing/thawing.
Lunardini, V.J., MP 2304, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.55-64, Refs. 61-64.
Heat transfer, Freezing, Thawing, Heat balance, Phase transformations, Soil freezing, Permafrost, Freeze thaw cycles, Analysis (mathematics).
One of the most difficult and yet most interesting areas of heat transfer is conduction (or convection) with freezing or thawing. The inherent non-linearity of the problem along with the unknown moving interface precludes exact solutions for most practical cases. This has spurred great effort to devise approximate solution methods which are accurate and of general application. Many of the known exact solutions are listed here along with a brief discussion of two approximate methods: the quasi-static and the heat balance integral. Space limitations rule out the inclusions of such useful variational methods as that of Biot or of a treatment in more detail.

42-1696
Heat transfer and temperature distribution in asphalt during road paving operations under cold weather conditions.
White, S., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.71-79, 8 refs.
Besant, R.W., Bergan, A.T.
Cold weather construction, Heat transfer, Bitumens, Roads, Paving, Temperature distribution, Temperature effects, Mathematical models.

42-1697
Computation of two-dimensional steady-state temperature distribution around a basement.
Krarti, M., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.81-87, 6 refs.
Kreider, J.F.
Foundations, Heat transfer, Buildings, Soil temperature, Analysis (mathematics), Heat loss, Temperature distribution, Heat flux.

42-1698
Study of the adherent layer on different types of ground in permafrost regions on the Qinghai-Xizang Plateau.
Zhu, L., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.89-93, 4 refs.
Permafrost heat transfer, Thermal diffusion, Soil air interface, Humidity, Air temperature, Soil temperature, Analysis (mathematics).

42-1699
Fundamental study on the solidification of supercooled liquid droplets.
Ichimiya, K., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.95-100, 17 refs.
Freezing, Supercooling, Drops (liquids), Ice formation, Distribution.

42-1700
Modelling trash rack freezeup by frazil ice.
Daly, S.F., MP 2305, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.101-106, 10 refs.
Freezeup, Frazil ice, Ice solid interface, Ice adhesion, Heat transfer, Ice formation, Mathematical models, Drainage.
The freezeup of trash racks by frazil ice occurs in a sequence that has not been quantitatively described. Because of the difficulty in observation and measurement, very little is quantitatively known about the concentration of frazil ice at the intake, the mechanism(s) of underwater ice adhesion, the deposition efficiency of frazil ice, the contribution of different heat transfer modes to the ice growth on the rack, and the relationship of the head loss through the rack to the flow velocity as a function of the mass of ice present. A comparison of the ice generation by conduction and convection with the mass of ice deposited on the rack from the flow indicates that deposition is the most significant mode of ice formation on the rack. Based on this, and other assumptions, a first generation mathematical model that describes the head loss through a trash rack during freezeup is developed. The mathematical model is developed for the case of a trash rack through which a constant discharge is maintained. The model is applied to laboratory data with good results. The laboratory data were obtained by modelling a section of a trash rack in a flume located in a cold room. Frazil ice produced in the flume caused the rack to freeze up while a constant discharge was maintained. The mathematical model can be used to suggest means, both structural and operational, of extending the time until total freezeup of a trash rack occurs. Improvements in the mathematical model are suggested.

42-1701
Growth rates of ice discs in slightly supercooled water.
Forest, T.W., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.107-113, 12 refs.
Sharma, R.
Ice growth, Supercooling, Water, Heat transfer, Mathematical models, Temperature distribution, Ice water interface, Phase transformations.

42-1702
Thermal control of spray ice accretion—de-icing.
Horjen, I., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.115-121, 18 refs.
Ice accretion, Heat transfer, Ice prevention, Spray freezing, Ice temperature, Thermal conductivity, Ice salinity, Ice density, Ice cover thickness.

42-1703
Use of an additive in sprayed sea water to accelerate ice structure construction.
Pare, A., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.123-129, 16 refs.
Carlson, L.E., Bourns, M., Karim, N.
Sea spray, Artificial ice, Ice islands, Offshore structures, Heat transfer, Tensile properties, Sea water, Mass transfer, Ice formation.

42-1704
Ice shapes produced by water droplets solidifying on inclined cables.
Tinkler, J., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.131-135, 12 refs.
Popplewell, N., Shah, A.H.
Power line icing, Transmission lines, Drops (liquids), Rain, Ice formation, Wind factors, Damage, Countermeasures, Ice prevention, Wind tunnels.

42-1705
Design, instrumentation, and performance of a refrigerated marine icing wind tunnel.
Foy, C.E., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.137-142, 4 refs.
Gates, E.M., Lozowski, E.P.
Ship icing, Wind tunnels, Offshore structures, Heat transfer, Sea spray, Design, Forecasting, Ice accretion, Models, Thermodynamics, Computer applications.

42-1706
Measurement of the average convective heat transfer coefficient around rough cylinders.
Szilder, K., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.143-147, 11 refs.
Gates, E.M., Lozowski, E.P.
Heat transfer, Surface roughness, Ice formation, Icing, Ice accretion, Convection, Wind tunnels.

42-1707
Experimental study of freezing behavior in a 90 deg curved pipe.
Inaba, H., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.149-154, 9 refs.
Oiwake, S., Fukuda, T., Sugawara, M.
Freezing, Water pipes, Fracturing, Ice growth, Ice formation, Water flow.

42-1708
Freezing fracture of water pipes in low temperature.
Saito, H., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.155-160, 3 refs.
Freezing, Water pipes, Fracturing, Heat transfer, Mathematical models, Deformation, Metals, Surface temperature, Stresses.

42-1709
Himuro type storage shed using the ice stored in winter season.
Kobiyama, M., International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.167-170, 2 refs.
Cold storage, Ice, Heat transfer, Design.

42-1710
Snow melting by showering aqueous solution with low solidification temperature.
Sugawara, M., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.183-187, 8 refs.
Inaba, H., Saito, H.
Snow melting, Solutions, Cold weather tests, Temperature effects, Snow density.

42-1711
Snow melting by heating from the bottom surface.
Aoki, K., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.189-194, 7 refs.
Hattori, M., Ujiie, T.
Snow melting, Heating, Stefan problem, Heat transfer, Ice losses, Models, Surface drainage, Analysis (mathematics), Heat loss.

42-1712
Numerical methodology for multidimensional melting heat transfer problem involving natural convection.
Saitoh, T., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.207-214, 32 refs.
Kato, H.
Ice melting, Freezing, Heat transfer, Mathematical models, Convection, Boundary layer.

42-1713
Boundary element method for multidimensional heat conduction with phase change.
Wang, C., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.215-220, 16 refs.
Tu, C.
Freezing, Liquids, Permafrost heat transfer, Phase transformations, Temperature effects, Analysis (mathematics), Conduction.

42-1714
Heat conduction in 1-D ice formation with temperature-dependent conductivity and time-dependent boundary conditions.
Wang, C., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.221-225, 9 refs.
Tu, C.
Heat transfer, Ice formation, Ice temperature, Boundary layer, Thermal conductivity, Conduction, Temperature distribution, Time factor.

42-1715
Effect of natural convection on ice formation around an isothermally cooled horizontal cylinder.
Cheng, K.C., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.227-234, 18 refs.
Inaba, H., Gilpin, R.R.
Ice formation, Heat transfer, Ice water interface, Water temperature, Temperature effects, Convection, Temperature distribution, Ice cover thickness, Analysis (mathematics).

42-1716
Integral solutions for phase change problems with inner/outer convective heat transfer boundary conditions.
Wang, H.P., et al, International Symposium on Cold Regions Heat Transfer, Edmonton, Alta., June 4-6, 1987. Proceedings. Edited by K.C. Cheng, V.J. Lunardini and N. Seki, New York, American Society of Mechanical Engineers, 1987, p.135-240, 4 refs.
Perry, E.M.
Ice formation, Heat transfer, Boundary layer, Freezing, Phase transformations, Mathematical models, Convection, Time factor.

42-1717
Cooperative model for orientational defects in ice: continuum approach.
Kriachko, E.S., *Chemical physics letters,* Nov. 13, 1987, 141(4), p.346-349, 15 refs.
Ice crystal structure, Molecular structure, Hydrogen bonds, Water structure.

42-1718
Some techniques and uses of 2D-C habit classification software for snow particles.
Holroyd, E.W., III, *Journal of atmospheric and oceanic technology,* Sep. 1987, 4(3), p.498-511, 11 refs.
Snow crystal structure, Classifications, Snowfall, Falling bodies, Snow pellets, Cloud seeding.

42-1719
Trapping of gases by water ice and implications for icy bodies.
Bar-Nun, A., et al, *Advances in space research,* 1987, 7(5), p.45-47, 4 refs.
Prialnik, D., Laufer, D., Kochavi, E.
Gas inclusions, Impurities, Extraterrestrial ice.

42-1720
Europa, tidally heated oceans, and habitable zones around giant planets.
Reynolds, R.T., et al, *Advances in space research,* 1987, 7(5), p.125-132, 27 refs.
McKay, C.P., Kasting, J.F.
Extraterrestrial ice, Planetary environments, Cryobiology.

Tidal dissipation in the satellites of a giant planet may provide sufficient heating to maintain an environment favorable to life on the satellite surface or just below a thin ice layer. In our own solar system, Europa, one of the Galilean satellites of Jupiter, could have a liquid ocean which may occasionally receive sunlight through cracks in the overlying ice shell. In such a case, sufficient solar energy could reach liquid water that organisms similar to those found under antarctic ice could grow. In other solar systems, larger satellites with more significant heat flow could represent environments that are stable over an order of Aeons and in which life could perhaps evolve. We define a zone around a giant planet in which such satellites could exist as a tidally-heated habitable zone. This zone can be compared to the habitable zone which results from heating due to the radiation of a central star. In our solar system, this radiatively-heated habitable zone contains the Earth.

42-1721
Radar-glory theory for icy moons with implications for radar mapping.
Eshleman, V.R., *Advances in space research,* 1987, 7(5), p.133-136, 16 refs.
Extraterrestrial ice, Radar echoes, Backscattering.

42-1722
Measurements of time-dependent neutron spectra from low-temperature ice block.
Sakamoto, S., et al, *Journal of nuclear science and technology,* Sep. 1987, 24(9), p.693-701, 13 refs.
Neutron probes, Ice physics, Laboratory techniques.

42-1723
Utilities delivery in cold regions; Proceedings of symposium held May 25 and 26, 1982.
Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982, *Canada. Environmental Protection Service. Water pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, 419p., Refs. passim.
For selected papers see 42-1724 through 42-1732.
Smith, D.W., comp.
Utilities, Sanitary engineering, Permafrost distribution, Water supply, Meetings, Waste treatment, Water treatment, Sewage disposal, Fires, Economic analysis.

42-1724
Latest experiences with small-scale water systems in Greenland.
Rauschenberger, K., *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.60-70.
Water supply, Permafrost distribution, Frost penetration, Underground pipelines, Utilities, Greenland.

42-1725
Water conservation in Barrow, Alaska.
Pollen, M.R., et al, *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.102-109, 3 refs.
Smith, D.W.
Water supply, Utilities, Waste disposal, Water treatment, Maintenance, Equipment, United States—Alaska—Barrow.

42-1726
Operation and maintenance considerations for the design of arctic water systems.
Mauser, M.W., *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.180-199.
Water supply, Cold weather operation, Design, Utilities, Maintenance.

42-1727
Heating enclosed wastewater treatment facilities with heat pumps.
Martel, C.J., et al, *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, MP 1976, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.262-280, 13 refs.
Phetteplace, G.
Waste treatment, Water treatment, Heating, Sanitary engineering, Utilities, Pumps, Cost analysis, Winter maintenance.

42-1728
Heat losses from the central heat distribution system at Fort Wainwright.
Phetteplace, G., *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, MP 2310, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.308-328, 5 refs.
Heat loss, Heating, Utilities, Underground pipelines, Air temperature, Temperature effects, Analysis (mathematics), Computer programs, Soil temperature, Seasonal variations.

42-1729
Solid waste management in remote Alaskan communities.
Tilsworth, T., *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.329-344, 20 refs.
Waste disposal, Waste treatment, Solids, Land reclamation, Permafrost, Environmental protection.

42-1730
Underground utilities in Barrow, Alaska.
Cerutti, J.L., et al, *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.358-382, 4 refs.
Zirjacks, W.L., Hwang, C.T., Bruggers, D.E.
Underground pipelines, Permafrost distribution, Utilities, Trenching, Design, Sewage treatment.

42-1731
Sewage pump station design for Barrow, Alaska.
Robertson, W.A., et al, *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.383-400.
Martin, R.W., III.
Sewage disposal, Permafrost distribution, Utilities, Pumps, Design, United States—Alaska—Barrow.

42-1732
Case study—potable water reservoir, Tuktoyaktuk, Northwest Territories.
Milburn, B., et al, *Canada. Environmental Protection Service. Water Pollution Control Directorate. Economic and technical review report,* Dec. 1982, EPS 3-WP-82-6, Symposium on Utilities Delivery in Cold Regions, 3rd, Edmonton, Alta., May 25-26, 1982. Proceedings. Compiled by D.W. Smith, p.401-419, 13 refs.
Water supply, Reservoirs, Permafrost distribution, Utilities, Underground pipelines, Environmental impact, Dredging.

42-1733
Atmospheric mercury concentrations inside Scott Base.
De Mora, S.J., et al, *New Zealand antarctic record,* 1987, 8(1), p.5-8, 12 refs.
Patterson, J.E., Bibby, D.M.
Air pollution, Chemical analysis, Antarctica—Scott Station.
A survey of mercury levels inside Scott Base was conducted as part of a study of atmospheric mercury in the Ross Dependency. Baseline concentrations of atmospheric mercury are known to be low in remote locations. Concentrations of the order of 1-2 ng/cu m are typically observed for clean air and even in urban environments tend to be well below 100 ng/cu m. Mercury in air samples at sites near Scott base was analyzed using a mercury detector within the base. Thus, the air survey within the base was a necessary precaution to check for local contamination. At the same time, sampling and analytical procedures could be tested, in particular ensuring suitable blanks and detection limits were attainable. Results of the collection and analysis of the air samples are discussed. (Auth.)

42-1734
Environmental impact assessment in New Zealand's antarctic programme—where to from here? A presentation to the NZARP Seminar on the 1986/87 Field Season.
Keys, H., *New Zealand antarctic record,* 1987, 8(1), p.9-17, 10 refs.
Environmental protection, Antarctica.
There is an increasing intensity and diversity of human activities in the Antarctic. The 50% increase in the number of Consultative Parties to the Antarctic Treaty since 1977 has meant more bases and other buildings have been constructed and more scientific programs and logistic support carried out. This increase is likely to continue since there has been a 210% increase in the number of states who have acceded to the Treaty since 1977. In addition, there is currently a growing number of independent expeditions. This increased activity is leading to an increased potential for significant environmental damage and degradation. As a tool to be used to protect the environment in the New Zealand Antarctic Research Program, the Environmental Impact Assessment is analyzed, its strengths and weaknesses are enumerated and its general approach is compared to that of SCAR.

42-1735
Antarctic field tests on SARSAT personal locater beacons.
Bindschadler, R., *U.S. National Aeronautics and Space Administration. Technical memorandum,* Oct. 1987, TM 4008, 15p. N88-10403.
Snow cover effect, Crevasses, Radio communication, Rescue operations, Antarctica.
Field tests of SARSAT personal locater beacons were conducted in the Antarctic to assess the viability of using these beacons to increase the safety of antarctic field parties. Data were collected on the extent to which dry or wet snow, melting conditions, crevasse walls and snow bridges affected the ability of the SARSAT satellite to calculate an accurate position of the beacon. Average response time between beacon turn-on and alert reception in McMurdo was between 4 and 5 hours for these tests. It is concluded that the SARSAT system is viable for antarctic operations and it is recommended that it be implemented for future field operations. Because obstruction of line-of-site between beacon and satellite degrades the accuracy of the location calculation (particularly in wet snow), it is further recommended that field parties have sufficient numbers of beacons to insure that in an emergency, one will be able to operate from the surface. (Auth.)

42-1736
Development of methodology for design of snow roads and airstrips.
Lee, S.M., et al, Houghton, Michigan Technological University, 1986, 37p.
Haas, W.M.
Snow compaction, Snow roads, Runways, Cold weather construction, Antarctica—Amundsen-Scott Station, Antarctica—McMurdo Station.
With the object of developing methods for improved runways in Antarctica, rammsonde profile measurements were made at selected sites of the roadways between McMurdo Station and Williams Airfield and at several points in the Amundsen-Scott Station skiway, taxiway and construction sites. Snow pit data were collected at various locations at both stations. This report summarizes the following: the present status of the snow pit data analysis; a study aimed at developing a suitable binder-snow mix and a method to process snow for higher compaction strength; and the current status of a field test in Houghton to try several binder-snow mix *in situ.* It is concluded that several layers of snow-binder mixture compacted, one layer at a time, on heat-treated base of hard ice will likely accommodate safe traffic and wheeled landing of aircraft during the austral summer at South Pole Station and in McMurdo.

42-1737
Some problems and achievements in destruction mechanics. [Nekotorye problemy i dostizheniia mekhaniki razrusheniia],
Novozhilov, V.V., et al, *Akademiia nauk SSSR. Vestnik,* Sep. 1987, No.9, p.96-111, In Russian.
Slepian, L.I.
Ice strength, Ice cover strength, Fracturing, Crack propagation, Stresses, Metals, Steels, Loading, Periodic variations.

42-1738
Fifty years of the drifting stations "North Pole". [50-letie dreifuiushchikh stantsii "Severnyĭ polius"],
Treshnikov, A.F., *Akademiia nauk SSSR. Vestnik,* Sep. 1987, No.9, p.133-141, In Russian.
Expeditions, Drift stations, Polar regions, Arctic Ocean.

42-1739
Seasonal thawing of the frozen soils of Transbaikalia.
Kulikov, A.I., *Soviet soil science,* May-June 1987, 19(3), p.76-83, Translated from Pochvovedenie 1987, No.4, p.41-47. 21 refs.
Soil temperature, Permafrost thermal properties, Ecology, Active layer, Seasonal freeze thaw, Permafrost hydrology, Soil water migration, Heat transfer.

42-1740
Estimation of soil temperature profiles from remote microwave and IR measurements. [Otsenka profilia temperatury pochvy po dannym distantsionnykh SVCh- i IK-izmereniĭ],
Reutov, E.A., et al, *Issledovanie Zemli iz kosmosa,* July-Aug. 1987, No.4, p.78-85, In Russian with English summary. 9 refs.
Shutko, A.M.
Soil temperature, Remote sensing, Measuring instruments, Spacecraft.

42-1741
International Geosphere-Biosphere Program: the role of observations from space. [Mezhdunarodnaia geosferno-biosfernaia programma: Rol' kosmicheskikh sredstv nabliudeniĭ],
Kondrat'ev, K.IA., *Issledovanie Zemli iz kosmosa,* July-Aug. 1987, No.4, p.104-118, In Russian with English summary. 41 refs.
Remote sensing, Geological surveys, Measuring instruments, Mapping, Oceanographic surveys, Ice surveys, Geobotanical interpretation, Spaceborne photography, Photointerpretation, Biogeography, Ecology, Spacecraft, Environments, Geologic processes.

42-1742
Studies of freezing potentials of natural and model dispersed media. [Izuchenie potentsialov zamerzaniia prirodnykh i model'nykh dispersnykh sred],
Romanov, V.P., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Geologiia i razvedka,* May 1987, No.5, p.107-111, In Russian. 18 refs.
Boĭtsova, L.IU.
Soil freezing, Ground thawing, Frost penetration, Freeze thaw tests, Interfaces, Electric potential, Ice formation, Soil water migration, Phase transformations.

42-1743
Introduction of conical strikers into frozen soil.
Koshelev, E.A., et al, *Soviet mining science,* Nov.-Dec. 1986 (Pub. Sep. 87), 22(6), p.467-471, For Russian original see 42-1499. 3 refs.
Chernikov, A.G.
Frozen fines, Physical properties, Tests, Projectile penetration, Impact strength.

42-1744
Thermal interaction of deep anodic ground plates with frozen soil.
Zuev, A.V., *Protection of metals,* Jan.-Feb. 87 (Pub. Sep. 87), 23(1), p.137-140, Translated from Zashchita metallov 23(1) p.176-180. 4 refs.
Underground facilities, Frozen ground, Metals, Corrosion.

42-1745
Discovery of eighteen-branched snow crystals.
Kikuchi, K., *Meteorological Society of Japan. Journal,* Apr. 1987, 65(2), p.309-311, 3 refs.
Snow crystal structure.

42-1746
Arctic research of the United States, Vol.1.
U.S. Interagency Arctic Research Policy Committee, MP 2306, Washington, D.C., Fall 1987, 121p.
Bowen, S.L., ed, Valliere, D.R., ed.
Research projects, Polar regions, Research projects.
This new journal provides an overview of Federally funded research activities in Arctic regions and includes brief commentaries on specific programs being pursued by twelve departmental-level groups and thirteen sub-groups. The range of research topics includes minerals, geology, wildlife, land, parks, mines, atmosphere, oceans, biology, glaciology, earth sciences, sea ice, snow, ice, Arctic engineering, medicine, fisheries, weather forecasting, tsunamis, ice edge, remote sensing, space plasma physics, permafrost, hydrology, tundra ecosystems, health, human services, cultural dynamics, archeology, ice breaking, iceberg reconnaissance, Arctic pollution, marine transportation, environmental protection, international Arctic coordination, forestry, soil conservation. Reports of meetings of the various committees and commissions involved in Arctic research, the Arctic Research and Policy Act of 1984, and Executive Order 12501 establishing the Arctic Research Commission and the Interagency Arctic Research Policy Committee are included.

42-1747
Polar deserts, their plant cover and plant production in the Canadian High Arctic.
Bliss, L.C., et al, *Holarctic ecology,* 1984, 7(3), p.305-324, 56 refs.
Svoboda, J., Bliss, D.I.
Deserts, Plant ecology, Canada—Northwest Territories—Elizabeth Islands.

42-1748
Plant communities and plant production in the western Queen Elizabeth Islands.
Bliss, L.C., et al, *Holarctic ecology,* 1984, 7(3), p.325-344, 54 refs.
Svoboda, J.
Plant ecology, Canada—Northwest Territories—Elizabeth Islands.

42-1749
Ka-32 multimission helicopter designed to operate in harsh climate. *Aviation week & space technology,* Sep. 2, 1985, 123(9), p.69.
Helicopters, Ice prevention.

42-1750
Comparative study of the air-void stability in a normal and a condensed silica fume field concrete.
Pigeon, M., et al, *ACI materials journal*, May-June 1987, 84(3), p.194-199, 10 refs.
Aitcin, P.-C., Laplante, P.
Freeze thaw cycles, Salting, Concrete durability, Concrete placing.

42-1751
Extinction behavior of dry snow in the 18-to 90-GHz range.
Hallikainen, M.T., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1987, GE-25(6), p.737-745, 26 refs.
Ulaby, F.T., Van Deventer, T.E.
Snow electrical properties, Dielectric properties, Attenuation, Radiometry.

42-1752
Toward snowmelt runoff forecast based on multisensory remote-sensing information.
Baumgartner, M.F., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1987, GE-25(6), p.746-750, 7 refs.
Seidel, K., Martinec, J.
Snowmelt, Meltwater, Runoff, Snow cover distribution, Mapping.

42-1753
Snow property measurements correlative to microwave emission at 35 G[illegible].
Davis, R.E., et al, *IEEE transactions on geoscience and remote sensing*, Nov. 1987, GE-25(6), p.751-757, 20 refs.
Dozier, J., Chang, A.T.C.
Snow cover structure, Microwaves, Absorption, Scattering.

42-1754
DC resistivity measurements of model saline ice sheets.
Arcone, S.A., *IEEE transactions on geoscience and remote sensing*, Nov. 1987, GE-25(6), MP 2308, p.845-849, 16 refs.
Ice electrical properties, Electrical resistivity, Salt ice.

42-1755
Antifreeze glycopeptides and peptides: interactions with ice and water.
DeVries, A.L., *Methods in enzymology*, 1986, 127(0), p.293-303, 19 refs.
DLC QP601.M49
Antifreezes, Ice water interface, Freezing points, Melting points.
Survival in ice-laden seawater in cold-blooded vertebrates is linked to the presence of biological antifreeze compounds in their blood circulation and in most of the other body fluids. In almost all antarctic notothenioid fishes and arctic gadoid (cods) fishes, the antifreeze compounds are a series of glycopeptides of similar composition, but varying between 2,600 and 33,000 daltons in size. The composition and best available estimates of size for the antifreeze glycopeptides and peptides are given in a table for several cold-water species. Experiments on detection, isolation, and purification of the antifreeze proteins, and antifreeze interactions with ice, are reviewed.

42-1756
Remote sensing: understanding the Earth as a system; Vols. 1 and 2.
International Geoscience and Remote Sensing Symposium (IGARSS '87), Ann Arbor, MI, May 18-21, 1987, New York, Institute of Electrical and Electronics Engineers, 1987, 1624p., Refs. passim. For selected papers see 42-1757 through 42-1770.
Remote sensing, Sea ice distribution, Microwaves, Snow optics, Radar photography, Snow cover effect, Snow physics, River ice.

42-1757
Improved cloud analysis using visible, near-infrared, infrared, and microwave imagery.
D'Entremont, R.P., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.1, New York, Institute of Electrical and Electronics Engineers, 1987, p.51-56, 12 refs.
Bunting, J.T., Felde, G.W., Thomason, L.W.
Cloud cover, Remote sensing, Snow cover effect, Spectroscopy, Meteorological data, Microwaves, Infrared photography, Sea water.

42-1758
Diagnosis of under-snow radar images by three-dimensional displaying technique in holographic imaging radar.
Aoki, Y., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.1, New York, Institute of Electrical and Electronics Engineers, 1987, p.571-576, 9 refs.
Sakamoto, Y., Takhashi, Y.
Snow cover effect, Radar photography, Microwaves, Equipment, Subglacial observations.

42-1759
Evaluation of brightening effect in emission from snow-covered terrain using tower-based MOS-1 MSR.
Igarashi, T., Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.847-852, 7 refs.
Snow cover effect, Microwaves, Brightness, Wave propagation, Snow optics, Mathematical models, Snow depth.

42-1760
Retrieval of snow water equivalent from satellite microwave radiometer data.
Hallikainen, M., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.853-858.
Jolma, P.
Snow water equivalent, Remote sensing, Microwaves, Radiometry, Brightness, Snow cover distribution.

42-1761
Extinction coefficient of dry snow at microwave and millimeterwave frequencies.
Hallikainen, M.T., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.859-864, 14 refs.
Ulaby, F.T., Van Deventer, T.E.
Snow physics, Microwaves, Wave propagation, Attenuation, Temperature effects, Remote sensing, Transmission.

42-1762
Dielectric properties of mixtures with inhomogeneous scatterers: application to rain and hail modeling.
Sihvola, A., Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1027-1030.
Hail, Remote sensing, Dielectric properties, Scattering, Ice water interface, Mathematical models, Rain, Fog.

42-1763
Theoretical models for microwave remote sensing of snow-covered sea ice.
Lin, F.C., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1121-1125, 30 refs.
Kong, J.A., Shin, R.T.
Sea ice, Remote sensing, Microwaves, Scattering, Snow cover effect, Mathematical models.

42-1764
Theoretical and experimental study of the radar backscatter of arctic sea ice.
Onstott, R.G., Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1127-1129, 8 refs.
Sea ice, Remote sensing, Microwaves, Backscattering, Melting points, Ice physics, Ice electrical properties, Surface roughness, Ice salinity.

42-1765
Progress on digital algorithms for deriving sea ice parameters from SAR data.
Shuchman, R.A., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1131-1133, 13 refs.
Sea ice distribution, Remote sensing, Analysis (mathematics).

42-1766
Observing rotation and deformation of sea ice with synthetic aperture radar.
Vesecky, J.F., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1137-1145, 11 refs.
Sea ice, Remote sensing, Drift, Ice deformation, Ice mechanics.

42-1767
Optimum use of dual frequency passive microwave measurements for ice/ocean interactions.
Rubinstein, I.G., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1147-1149, 12 refs.
Ramseier, R.O.
Ice water interface, Remote sensing, Microwaves, Sea ice distribution, Sea water, Wind, Computer applications.

42-1768
Investigation of multi-dimensional algorithms using active and passive microwave data for ice concentration determination.
Cavalieri, D.J., et al, Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1151-1153, 3 refs.
Burns, B.A., O[illegible]stott, R.G.
Sea ice distrib ition, Remote sensing, Microwaves, Ice conditions, Ice mechanics, Ice floes.

42-1769
Use of radars to measure the distribution of ice and frazil in rivers.
Toikka, M., Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1405-1408, 2 refs.
River ice, Ice conditions, Remote sensing, Frazil ice, Ice cover thickness.

42-1770
Pattern analysis technique for distinguishing surface and cloud types in the polar regions.
Ebert, E., Remote sensing: understanding the Earth as a system. International Geoscience and Remote Sensing Symposium (IGARSS) '87), Ann Arbor, MI, May 18-21, 1987. Digest, Vol.2, New York, Institute of Electrical and Electronics Engineers, 1987, p.1611-1616, 18 refs.
Cloud cover, Supercooled clouds, Topographic features, Remote sensing, Detection, Radiometry, Polar regions, Snow cover effect, Sea ice.

42-1771
Characteristics of the ice and thermal regimes of hydroelectric stations and pumped-storage stations.
Gotlib, IA.L., *Hydrotechnical construction*, Feb. 1987 (Pub. Aug. 87), 21(2), p.91-95, Translated from Gidrotekhnicheskoe stroitel'stvo. 17 refs.
Electric power, Hydraulic structures, River ice, Ice conditions, Ice surveys.

42-1772
Application of the plastic flow theory to solutions of boundary problems on interactions of stress fields with moisture in sagging loess soils. (Primenenie teorii plasticheskogo techeniia k resheniiu kraevykh zadach vzaimodeistviia polei napriazhenii i vlazhnosti v lessovykh prosadochnykh gruntakh).
Shadunts, K.Sh., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1987, No.8, p.115-119, In Russian. 4 refs.
Anikin, V.S.
Clay soils, Fines, Loess, Soil water migration, Settlement (structural), Mathematical models.

42-1773
Results of experimental testing of the reliability of starting pneumo-percussion mechanisms at subzero temperatures. [Rezul'taty ekaperimental'nogo issledovaniia nadezhnosti zapuska pnevmoudarnykh mekhanizmov v usloviiakh otritsatel'nykh temperatur],
Abramenkov, E.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1987, No.9, p.107-110, In Russian.
Bogachenkov, A.G., Bryzgalov, V.P., Timofeev, G.F.
Low temperature tests, Hammers, Vibration, Engine starters.

42-1774
Calculating the temperature of continuous heating of concrete mixtures in conveying electromagnetic pipes. [K raschetu temperatury nepreryvnogo nagreva betonnoĭ smesi v transportiruiushcheĭ elektromagnitnoĭ trube],
Pshonkin, N.G., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1987, No.9, p.119-122, In Russian. 6 refs.
Kvashnin, A.G.
Winter concreting, Concrete heating, Concrete aggregates, Transportation, Pipes (tubes), Prefabrication, Reinforced concretes.

42-1775
Critical comparison of moving average and cumulative summation control charts for trace analysis data.
McGee, I.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1987, SR 87-21, 57p., ADA-188 312, 20 refs.
Grant, C.L.
Waste disposal, Chemical analysis, Environmental impact, Soil pollution, Isotope labeling, Detection.
Percentage recovery estimates have been obtained for 15 analytes or surrogates of environmental concern by four commercial laboratories over a two-year period. These quality control analyses were performed using standardized methods on a control soil matrix. Over 100 lots of results were available for many of these analytes. This massive amount of data afforded an opportunity to compare the sensitivity of different quality control protocols for detecting "out-of-control" situations and also to compare the performance of the four laboratories. Recoveries averaged 90-100% for 11 of 15 analytes. Reproductibility of recovery estimates was surprisingly consistent from lab-to-lab. From a comparison of moving average control charts (n = 2 and n = 3) with cumulative summation charts, the n = 3 moving average charts were considered most suitable for routine lot-to-lot control by contractors. The cumulative summation charts are very useful for situations requiring critical diagnostic analysis of problems. Where duplicate recoveries were obtained with each lot, lot-to-lot variability was similar in magnitude to within-lot variability. To avoid an excessive number of out-of-control responses, control limits should be based on total variability rather than within-lot variability.

42-1776
Composition of acidic meltwaters during snowmelt in the Scottish Highlands.
Tranter, M., et al, *Water, air, and soil pollution*, Nov. 1987, 36(1-2), p.75-90, 25 refs.
Davies, T.D., Brimblecombe, P., Vincent, C.E.
Meltwater, Snow composition, Water chemistry, Pollution.

42-1777
Invertebrate activity under snow in deciduous woods.
Merriam, G., et al, *Holarctic ecology*, Feb. 1983, 6(1), p.89-94, 34 refs.
Wegner, J., Caldwell, D.
Animals, Snow cover effect.

42-1778
Non-deterministic approach to anisotropic growth patterns with continuously tunable morphology: the fractal properties of some real snowflakes.
Nittmann, J., et al, *Journal of physics A: mathematical and general*, Dec. 1, 1987, 20(17), p.L1185-L1191, 12 refs.
Stanley, H.E.
Snowflakes, Snow crystal structure, Crystal growth.

42-1779
Species patterns, edaphic characteristics, and plant water potential in a high-arctic brackish marsh.
Dawson, T.E., et al, *Canadian journal of botany*, 1987, Vol.65, p.863-868, With French summary. 32 refs.
Bliss, L.C.
Salinity, Plant ecology, Swamps, Meltwater.

42-1780
Responses of *Ranunculus sabinei* and *Papaver radicatum* to removal of the moss layer in a high-arctic meadow.
Sohlberg, E.H., et al, *Canadian journal of botany*, 1987, Vol.65, p.1224-1228, With French summary. 14 refs.
Bliss, L.C.
Plant ecology, Plants (botany), Mosses, Soil water.

42-1781
Remote sensing of snow.
Foster, J.L., et al, *American Geophysical Union. Transactions*, Aug. 11, 1987, 68(32), p.681-684, 25 refs.
Hall, D.K., Chang, A.T.C.
Remote sensing, Snow optics, Microwaves, Snow water equivalent, Snow cover distribution.

42-1782
Passive microwave data from snow and ice research: planned products from the DMSP SSM/I system.
Weaver, R., et al, *American Geophysical Union. Transactions*, Sep. 29, 1987, 68(39), p.769, 776-777, 22 refs.
Morris, C., Barry, R.G.
Sea ice distribution, Spacecraft, Radiometry, Microwaves, Snow optics, Ice optics, Remote sensing.

42-1783
Solifluction in the southern Canadian Rockies.
Smith, D.J., *Canadian geographer*, Winter 1987, 31(4), p.309-318, With French summary. 31 refs.
Periglacial processes, Solifluction, Soil creep, Measuring instruments, Canada—Rocky Mountains.

42-1784
Mantle rheology and satellite signatures from present-day glacial forcings.
Sabadini, R., et al, *Journal of geophysical research*, Jan. 10, 1988, 93(B1), p.437-447, 55 refs.
Yuen, D.A., Gasperini, P.
Gravity, Glacier flow, Ice sheets, Antarctica.
By means of transient viscoelastic modeling it has been demonstrated that the longwavelength components of the Earth's gravitational field are sensitive to current glacial discharges and also to the growth of the antarctic ice sheet occurring today. In the model, corrections to the gravitational harmonic coefficient (GHC) value currently attributed solely to the Pleistocene deglaciation may be as large as 30%, depending on the magnitude of growth of the antarctic ice sheet. These effects would cause some uncertainties, no more than a factor of two or three, in the lower mantle viscosities extracted from the GHC data for the lower branch solutions. Although there are uncertainties in current glacial melting estimates, the contamination of the inverted viscosity would be linearly proportional to the uncertainties in the input parameters, for errors in the small amplitude regime, 0(10%). Larger uncertainties would require detailed sensitivity analysis for assessing the impact on the inferred viscosity solutions. These results for the higher zonal harmonics reveal that Antarctica's mass balance may conceivably play an important role. (Auth. mod.)

42-1785
Particle flux beneath fast ice in the shallow southwestern Beaufort Sea, Arctic Ocean.
Carey, A.G., Jr., *Marine ecology progress series*, Oct. 1987, 40(3), p.247-257, 54 refs.
Sea ice, Fast ice, Ocean currents, Particles.

42-1786
Resonant column testing of frozen Ottawa sand.
Bosscher, P.J., et al, *Geotechnical testing journal*, Sep. 1987, 10(3), p.123-134, 12 refs.
Nelson, D.L.
Sands, Frozen ground, Foundations, Soil mechanics.

42-1787
Simplification of gas turbine intake anti-icing systems.
Excell, J.R., et al, *Naval engineers journal*, Jan. 1988, 100(1), p.45-52, 8 refs.
Killinger, A.
Ice removal, Engines, Ships, Water intakes.

42-1788
Spectral light absorption and quantum yield of photosynthesis in sea ice microalgae and a bloom of *Phaeocystis pouchetii* from McMurdo Sound, Antarctica.
SooHoo, J.B., et al, *Marine ecology progress series*, Aug. 1987, 39(2), 78 refs.
Sea ice, Algae, Microbiology, Photosynthesis, Antarctica—McMurdo Sound.
Measurements were made in Dec. 1984 for both congelation ice and platelet ice microalgae and for a bloom of the planktonic prymnesiophyte *Phaeocystis pouchetii* from McMurdo Sound. Profiles of spectral irradiance through the ice column demonstrated that the irradiance environment of sea ice was vertically and horizontally heterogeneous, changing from blue-dominated to green-dominated with depth in the column, and varying from site to site depending on snow cover and ice algal patchiness. In response to reductions in irradiance, platelet ice microalgae consistently showed enhanced absorption of blue-green light relative to congelation ice microalgae. Samples of *P. pouchetii* from under the seasonal fast ice of McMurdo Sound also exhibited enhanced blue-green absorption relative to samples from open waters of the Ross Sea. The mean specific absorption coefficient (msac), for sea ice microalgae ranged between 0.0058 and 0.0097 sq m/(mg chl *a*), values characteristic of microalgae in green proplactive waters. For *P. pouchetii*, msac was greatest for samples taken from open water at the ice edge and decreased for samples taken from under the seasonal ice of McMurdo Sound. The quantum yield of photosynthesis for these microalgae is given, with no significant differences found between congelation ice and platelet ice algae. (Auth. mod.)

42-1789
Flying conditions in the Arctic.
Atkeson, E., *U.S. Naval Institute. Proceedings*, Sep. 1987, 113(9), p.85.
Climate, Polar regions.

42-1790
Sorption of chemical agents and simulants: measurement and estimation of octanol-water partition coefficient.
Leggett, D.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1987, SR 87-18, 15p., ADB-117 069, 14 refs.
Military operation, Chemical composition, Soil pollution, Water flow, Solubility, Time factor, Countermeasures, Analysis (mathematics), Polar regions.
Octanol-water partition coefficients were determined experimentally for 8 simulants. These were supplemented with published fragment constants and water solubilities to predict log K(ow) values of several threat agents. These estimates can be used to predict sorption and transport in soils. If correct, organophosphorus agents are more mobile in soil water than previously expected.

42-1791
Foreign naval literature survey.
U.S. Naval Intelligence Support Center. Translation Division, *Navscan*, Jan. 1988, NISC translation No.8500, 72p., List of translations p.48-52.
Military operation, Military transportation, Legislation.

42-1792
Reconnaissance of Noatak National Preserve and biosphere reserve as a potential site for inclusion in the integrated global background monitoring network.
Wiersma, G.B., et al, June 1986, 84p., PB88-100037, Refs. p.80-82.
Slaughter, J.H., McKee, A.
Ecosystems, Environmental protection, Vegetation, Pollution, Monitors, Algae, Biomass, United States—Alaska—Noatak National Preserve.

42-1793
Physical optics theory of scattering from the ice canopy.
McDaniel, S.T., *Acoustical Society of America. Journal*, Dec. 1987, 82(6), p.2060-1067, 11 refs.
Ice optics, Light scattering, Ice bottom surface, Sea ice, Surface roughness, Ice morphology, Pressure ridges, Backscattering, Analysis (mathematics).

42-1794
Polar oceans.
Gordon, A.L., et al, *Reviews of geophysics*, Mar. 1987, 25(2), p.227-233, Refs. p.232-233.
Owens, W.B.
Glaciers, Polynyas, Ice shelves, Ice air interface, Ice water interface, Sea ice distribution.
The progress in studies of ocean circulation, water mass formation, and ocean-ice in eraction in both the southern ocean and the Arctic region during the period 1983-86 is surveyed. This review places emphasis on U.S. publications, but other significant work is included. It is not meant to be a complete synthesis of polar oceanography of the last four years, but rather to provide an overview of progress. (Auth.)

42-1795
Antarctic stratospheric chemistry of chlorine nitrate, hydrogen chloride, and ice: release of active chlorine.
Molina, M.J., et al, *Science*, Nov. 27, 1987, 238(4831), p.1253-1257, 36 refs.
Tso, T.L., Molina, L.T., Wang, F.C.Y.
Ice crystals, Ice composition.
The reaction rate between atmospheric hydrogen chloride (HCl) and chlorine nitrate (ClONO2) is greatly enhanced in the presence of ice particles. This reaction could play an important role in explaining the observed depletion of ozone over Antarctica; it releases photolytically active chlorine from its most abundant reservoir species, and it promotes the formation of HNO3 and thus removes nitrogen dioxide (NO2) from the gas phase. Hence it establiahes the necessary conditions for the efficient catalytic destruction of ozone by halogenated free radicals. In the absence of HCl, ClONO2 also reacts irreversibly with ice with a collision efficiency of about 0.02 at 200 k; the product hypochlorous acid (HOCl) is released to the gas phase on a time scale of minutes. (Auth. mod.)

42-1796
Reaction of chlorine nitrate with hydrogen chloride and water at antarctic stratospheric temperatures.
Tolbert, M.A., et al, *Science*, Nov. 27, 1987, 238(4831), p.1258-1260, 20 refs.
Rossi, M.J., Malhotra, R., Golden, D.M.
Ice crystals, Ice composition.
Laboratory studies of heterogeneous reactions important for ozone depletion over Antarctica are reported. The reaction of chlorine nitrate (ClONO2) with H2O and hydrogen chloride (HCl) on surfaces that simulate polar stratospheric clouds (ice and nitric acid (HNO3)-ice and sulfuric acid) are studied at temperatures relevant to the antarctic stratosphere. A reaction produced gas-phase hypochlorous acid (HOCl) and condensed-phase HNO3; HOCl underwent a secondary reaction on ice producing dichlorine monoxide (Cl2O). In addition to the reaction with H2O, ClONO2 reacted with HCl on ice to form gas-phase chlorine (Cl2) and condensed-phase HNO3. Essentially all of the HCl in the bulk of the ice can react with ClONO2 on the ice surface. The gaseous products of the above reactions, HOCl, Cl2O, and Cl2, could readily photolyze in the antarctic spring to produce active chlorine for ozone depletion. Furthermore, the formation of condensed-phase HNO3 could serve as a sink for odd nitrogen species that would otherwise scavenge the active chlorine. (Auth. mod.)

42-1797
Radiation stability of organic matter in liquid and frozen H2O, NH3 and water-ammonia mixtures.
Nebeling, B., et al, *Advances in space research*, 1986, 6(12), p.207-210, 15 refs.
Roessler, K., Schmitz, G.
Ice composition, Extraterrestrial ice, Solutions, Radiation.

42-1798
Molecular aspects of adaptation to extreme cold environments.
Finegold, L., *Advances in space research*, 1986, 6(12), p.257-264, 40 refs.
Cold tolerance, Acclimatization.
Here are reviewed and summarized the strategies adopted by living organisms to survive low temperatures, from a molecular and membrane point of view. Two prime examples of connections between biological cold adaptation and the molecular level are antifreeze proteins in fish from cold sea water (the DNA sequence of the protein gene is now known) and the fluidity characteristics of cell membranes in a wide variety of organisms. In model membranes of phospholipids, stabler s-phases have recently been found to form at low temperatures. Antarctic endolithic organisms, living just under the surface of rocks, are exposed to long periods of low temperatures, and may develop such phases in their membranes. In the saturated phosphatidyl cholines, only lipids with a restricted range of acyl chain lengths show simultaneously s-phases and a main transition: this restricted range is about the restricted range found in natural membranes. The s-phases also form in the presence of natural cryoprotectants, and may be connected with botanical vernalization. (Auth.)

42-1799
Antarctic cold desert and the search for traces of life on Mars.
Friedmann, E.I., *Advances in space research*, 1986, 6(12), p.265-268, 13 refs.
Microbiology, Acclimatization, Microclimatology, Weathering, Cold tolerance, Antarctica—Asgard Range.
The cryptoendolithic microorganisms that live inside rocks in the frigid Ross Desert of Antarctica can serve as a terrestrial model for what may have happened to life forms on Mars when the planet became dry and cold. Trace fossils of microbial rock colonization exist in Antarctica, and similar structures could have formed on Mars. In some respects, such trace fossils could be an easier target for life-detection systems than fossils of cellular structures. (Auth.)

42-1800
Cold hardiness of forage grasses grown on the Canadian prairies.
Limin, A.E., et al, *Canadian journal of plant science*, Oct. 1987, 67(4), p.1111-1115, With French summary. 16 refs.
Fowler, D.B.
Plant physiology, Frost resistance.

42-1801
Low-temperature stress in field and forage crop production—an overview.
Andrews, C.J., *Canadian journal of plant science*, Oct. 1987, 67(4), p.1121-1133, With French summary. 63 refs.
Plant physiology, Frost resistance.

42-1802
Low-temperature stress in Canadian horticultural production—an overview.
Quamme, H.A., *Canadian journal of plant science*, Oct. 1987, 67(4), p.1135-1149, With French summary. 45 refs.
Plant physiology, Frost resistance.

42-1803
Frost tolerance of wheat, oats, barley, canola and mustard and the role of ice-nucleating bacteria.
Gusta, L.V., et al, *Canadian journal of plant science*, Oct. 1987, 67(4), p.1155-1165, With French summary. 8 refs.
O'Connor, B.J.
Plant physiology, Frost resistance.

42-1804
Impacts of freezing temperatures on crop production in Canada.
Brown, D.M., et al, *Canadian journal of plant science*, Oct. 1987, 67(4), p.1167-1180, With French summary. 28 refs.
Blackburn, W.J.
Plant physiology, Frost resistance.

42-1805
Vormsund test road. Part 4: summary report.
Nordal, R.S., et al, *Norway. Veglaboratoriet. Meddelelse*, July 1987, No.58, 80p., 37 refs.
Hansen, E.K.
Roads, Bearing strength, Subgrades, Freeze thaw cycles, Frost heave, Pavements, Design, Frost penetration, Settlement (structural), Temperature effects, Thaw weakening, Tests.

42-1806
Summary report: drilling fluid additive use and waste discharge in Arctic marine waters north of 60 deg for 1985.
Edwards, D.L.S., Yellowknife, N.W.T., Canada, Dept. of Indian and Northern Affairs, Water Resources Division, 1986, 42p., 3 refs.
Drilling fluids, Admixtures, Waste disposal, Water pollution, Mud, Hydrocarbons, Exploration, Arctic Ocean.

42-1807
Examples of ice pack rigidity and mobility characteristics determined from ice motion.
Lewis, J.K., et al, College Station, TX, Science Applications International Corporation, Jan. 1988, 17p., SAIC-87/1869, 15 refs.
Englebretson, R.E., Denner, W.W.
Ice mechanics, Pack ice, Ice strength, Freeze thaw cycles, Remote sensing, Ice breakup, Velocity, Impact strength, Offshore structures, Seasonal variations.

42-1808
Sea ice kinematics: space and time scales.
Lewis, J.K., et al, College Station, TX, Science Applications International Corporation, Jan. 1988, 35p., SAIC-87/1870, 10 refs.
Giuffrida, M.R., Denner, W.W.
Ice mechanics, Sea ice distribution, Ice navigation, Military operation, Time factor, Ice forecasting, Velocity.

42-1809
Types of weather and meteorological trends in winter 1985-1986 in Venetian mountains. [Tipi di tempo e andamento meteorologico dell'inverno 85/86 nella montagna veneta]
Monai, M., *Neve e valanghe*, Oct. 1987, No.5, p.6-21, In Italian.
Meteorological data, Snow accumulation, Winter, Mountains, Seasonal variations.

42-1810
Aerial photointerpretation as an instrument in environmental and avalanche studies. [La fotointerpretazione aerea quale strumento per lo studio ambientale e del fenomeno valanghivo]
Nevini, R., *Neve e valanghe*, Oct. 1987, No.5, p.22-29, 7 refs., In Italian.
Avalanches, Photointerpretation, Spectra, Measuring instruments, Topographic features.

42-1811
Temporary structures for stabilizing the snow cover: snow fences on Spinale Mountain. [Opere temporanee di stabilizzazione del manto nevoso: rastrelliere da neve sul monte Spinale]
Fait, P., *Neve e valanghe*, Oct. 1987, No.5, p.30-39, In Italian.
Snow stabilization, Avalanche formation, Snow fences, Countermeasures.

42-1812
Electronic thermometer for measuring snow cover temperature. [Un termometro elettronico per la misura delle temperature del manto nevoso]
Tomasi, G., *Neve e valanghe*, Oct. 1987, No.5, p.40-43, In Italian.
Snow depth, Snow temperature, Electronic equipment, Measuring instruments, Snow survey tools, Temperature measurement.

42-1813
Experimental evaluation of parameters affecting turbulent flow freeze blockage of a tube.
Thomason, S.B., *International journal of heat and mass transfer*, Oct. 1987, 30(10), p.2201-2205, 6 refs.
Freezing, Pipes (tubes), Turbulent flow, Heat transfer, Phase transformations, Temperature effects, Liquids, Computer applications.

42-1814
Holographic interferometry applied to the study of frost damage in concrete.
Rastogi, P.K., et al, *Journal of physics E: scientific instruments*, Dec. 1987, 20(12), p.1522-1525, 18 refs.
Jacquot, P., Pflug, L.
Holography, Concrete freezing, Measuring instruments, Concrete durability, Concrete aggregates, Frost action, Damage, Temperature effects, Stresses, Microstructure.

42-1815
Microwave signatures of snow crusts: modelling and measurements.
Reber, B., et al, *International journal of remote sensing*, Nov. 1987, 8(11), p.1649-1665, 18 refs.
Mätzler, C., Schanda, E.
Snow crust, Microwaves, Remote sensing, Scattering, Albedo, Snow electrical properties, Ice electrical properties, Models.

42-1816
Modelling of radar backscattering from low-salinity ice with ice ridges.
Johansson, R., et al, *International journal of remote sensing*, Nov. 1987, 8(11), p.1667-1677, 12 refs.
Askne, J.
Ice surface, Radar echoes, Remote sensing, Ice conditions, Microwaves, Pressure ridges, Backscattering, Ice salinity, Analysis (mathematics).

42-1817
Interpretation of Seasat radar-altimeter data over sea ice using near-simultaneous SAR imagery.
Ulander, L.M.H., *International journal of remote sensing*, Nov. 1987, 8(11), p.1679-1686, 20 refs.
Backscattering, Sea ice distribution, Radar echoes, Remote sensing, Ice conditions, Beaufort Sea.

42-1818
Standard specification for cold weather concreting.
American Concrete Institute. ACI Committee 306, Detroit, MI, June 1987, 4p. ACI 306.1-87.
Winter concreting, Cold weather construction, Concrete freezing, Concrete strength, Standards, Concrete curing, Temperature effects, Protection, Heating, Thermal insulation.

42-1819
Optical methods of satellite hydrophysics. Environmental investigations from automatic satellites. [Opticheskie metody sputnikovof gidrofiziki. Issledovanie okruzhaiushchei sredy s avtomaticheskikh ISZ]
Nelepo, B.A., et al, Kiev, Naukova dumka, 1986, 157p., In Russian with abridged English table of contents enclosed. 196 refs.
Grishin, G.A., Kienko, Iu.P., Koval', A.D.
Spacecraft, Water transport, Environmental protection, Ocean currents, Remote sensing, Air water interactions, Infrared spectroscopy, Hydrophysics, Water temperature, Ocean environments.
After discussing technical aspects of studying the ocean in the optical range, methods and means of spaceborne surveys, and processing of video data, satellite observations of large-scale changes in ocean and atmosphere, wave dynamics, and the bio-optical state of the ocean are discussed and illustrated. In the portion describing the large-scale changes in the ocean and atmosphere, the following concerns the Antarctic: the cyclonic surface circulation of the southern ocean waters differs from that in the Northern Hemisphere. A map to that effect is presented of long period averages of global surface currents during the northern winter. Spaceborne data for the period Jan. 8-15, 1983, shows that cyclogenesis covers a period of 7 days, cyclone dimensions vary between 300 and 1200 km, and the speed of motion from 180 to 420 km/day. Upon reaching the coast, the cyclones become stationary. Also presented and discussed is an illustration based on satellite data showing bands of clouds over the Southern Hemisphere for the 1969-1971 period.

42-1820
Sliding with cavity formation.
Fowler, A.C., *Journal of glaciology*, 1987, 33(115), p.255-267, 39 refs.
Ice mechanics, Glacier flow, Basal sliding, Cavitation, Subglacial caves, Subglacial drainage, Glacier beds, Rheology, Stresses, Analysis (mathematics), Slope orientation, Velocity.

42-1821
On the significance of normal stress effects in the flow of glaciers.
Man, C.-S., et al, *Journal of glaciology*, 1987, 33(115), p.268-273, 22 refs.
Sun, Q.-X.
Glacier flow, Ice creep, Ice crystal structure, Shear flow, Mathematical models, Stresses.

42-1822
Strain-rate and grain-size effects in ice.
Cole, D.M., *Journal of glaciology*, 1987, 33(115), MP 2311, p.274-280, 22 refs.
Ice deformation, Ice crystal structure, Strains, Grain size, Tests, Stress strain diagrams.
This paper presents and discusses the results of constant deformation-rate tests on laboratory-prepared polycrystalline ice. Strain-rates ranged from 0.000,000,1 to 0.1/s, grain-size ranged from 1.5 to 5.8 mm, and the test temperature was -5 C. At strain-rates between 0.000,000,1 and 0.001/s, the stress-strain-rate relationship followed a power law with an exponent of n=4.3 calculated without regard to grain-size. However, a reversal in the grain-size effect was observed: below a transition point near 0.000,004/s the peak stress increased grain-size, while above the transition point the peak stress decreased with increasing grain-size. This latter trend persisted to the highest strain-rates observed. At strain-rates above 0.001/s the peak stress became independent of strain-rate. The unusual trends exhibited at the lower strain-rates are attributed to the influence of the grain-size on the balance of the operative deformation mechanisms. Dynamic recrystallization appears to intervene in the case of the finer-grained material and serves to lower the peak stress. At comparable strain-rates, however, the large-grained material still experiences internal micro-fracturing, and thin sections reveal extensive deformation in the grain-boundary regions that is quite unlike the appearance of the strain-induced boundary migration characteristic of the fine-grained material.

42-1823
Glacier flow in a curving channel.
Echelmeyer, K., et al, *Journal of glaciology*, 1987, 33(115), p.281-292, 10 refs.
Kamb, B.
Glacier flow, Glacier beds, Stresses, Velocity, Analysis (mathematics), Shear stress.

42-1824
Victoria Lower Glacier and Ross Sea glaciation, Dry Valleys area, South Victoria Land, Antarctica.
Chinn, T.J.H., *Journal of glaciology*, 1987, 33(115), p.293-299, 22 refs.
Glaciation, Glacier flow, Glacier surfaces, Glacier surveys, Ice structure, Antarctica—Victoria Lower Glacier, Antarctica—Ross Sea.
Victoria Lower Glacier is a complex structure of ice from two distinct sources (Schultz Glacier to the north and a local *névé* of Victoria Lower Glacier) that join at a broad median shear zone. Evidence from the margins suggests that both are currently retreating. Algae in a block of frozen stratified sediment from within the ice of the terminal margin has a radiocarbon age of 20,200 year BP (NZ 6531 A), indicating that the glacier has advanced since that time. Superposition of ice levels of Ross Sea I glaciation on a radio echo-sounding profile of bedrock beneath the glacier indicates that it is unlikely that Ross Sea I ice entered the valley. The radiocarbon date supports this finding. (Auth.)

42-1825
Observations on a debris-covered polar glacier "Whisky Glacier", James Ross Island, Antarctic Peninsula, Antarctica.
Chinn, T.J.H., et al, *Journal of glaciology*, 1987, 33(115), p.300-310, Refs. p.309-310.
Dillon, A.
Rock glaciers, Glacier surfaces, Ice structure, Glacier beds, Antarctica—James Ross Island.
"Whisky Glacier" on James Ross I., comprises a *névé* and clean ice trunk surrounded by an extensive area of debris-covered ice resembling a rock glacier. The debris-free trunk of the glacier abuts abruptly against the broad, totally debris-covered tongue at a number of concentric zones where debris-laden beds crop out at the surface in a manner similar to the "inner moraine" formations of many polar glaciers. Ice structures and foliation suggest that "Whisky Glacier" is a polythermal glacier which is wet-based under the debris-free zone, and dry-based under the debris-covered zone. The transition from wet-based to dry-based conditions at the glacier sole is a powerful mechanism for entraining debris into a glacier and, in the case of "Whisky Glacier", for lifting debris to the surface. It is suggested that this may be a mechanism for forming some polar rock glaciers. (Auth. mod.)

42-1826
Evidence for a till layer beneath Storglaciären, Sweden, based on electrical resistivity measurements.
Brand, G., et al, *Journal of glaciology*, 1987, 33(115), p.311-314, 19 refs.
Pohjola, V., Hooke, R.L.
Glacial deposits, Subglacial observations, Electrical resistivity, Substrates, Glacier beds, Topographic features, Boreholes.

42-1827
On the relation of net balance, ice flow, and surface lowering of Lewis Glacier, Mount Kenya, East Africa, 1982-86.
Hastenrath, S., *Journal of glaciology*, 1987, 33(115), p.315-318, 7 refs.
Glacier mass balance, Glacier flow, Glacier surfaces, Distribution, Topographic features, Mapping, Kenya—Lewis Glacier.

42-1828
Interpretation of radio-echo returns from internal water bodies in Variegated Glacier, Alaska, U.S.A.
Jacobel, R.W., et al, *Journal of glaciology*, 1987, 33(115), p.319-323, 6 refs.
Anderson, S.K.
Glacial hydrology, Radio echo soundings, Subglacial caves, Wave propagation, Water, Glacier surges, Dielectric properties, United States—Alaska—Variegated Glacier.

42-1829
Stable isotopes and debris in basal glacier ice, South Georgia, southern ocean.
Sugden, D.E., et al, *Journal of glaciology*, 1987, 33(115), p.324-329, 9 refs.
Glacier beds, Glacier surfaces, Ice composition, Rock glaciers, South Georgia.
This paper combines a study of the rock debris and deltaD/deltaO-18 isotopic characteristics of basal ice sequences in 3 representative glaciers in South Georgia and concludes that the debris and ice has been entrained mainly by basal freezing. The size distribution of the rock debris is typical of crushing and abrasion, and reflects transport at the ice-rock interface. The deltaD/deltaO-18 relationships show that clear ice associated with the debris has accreted through freezing. The white bubbly glacier ice has deltaD/deltaO-18 relationships typical of precipitation which demonstrates an altitudinal effect between glaciers. (Auth.)

42-1830
Airborne river-ice thickness profiling with helicopter-borne UHF short-pulse radar.
Arcone, S.A., et al, *Journal of glaciology*, 1987, 33(115), MP 2312, p.330-340, 14 refs.
Delaney, A.J.
River ice, Ice cover thickness, Scattering, Remote sensing, Profiles, Equipment, Lake ice, Surface roughness, Frazil ice.
The ice-thickness profiling performance of a helicopter-mounted short-pulse radar operating at approximate center frequencies of 600 and 900 MHz was assessed. The antenna packages were mounted 1.2 m off the skid of a small helicopter whose speed and altitude were varied from about 1.8 to 9 m/s and 3 to 12 m. Clutter from the helicopter offered minimal interference with the ice data. Data were acquired in Alaska over lakes (as a proving exercise) and two rivers, whose conditions varied from open water to over 1.5 m of solid ice with numerous frazil-ice formations. The most readily interpretable data were acquired when the ice or snow surface was smooth. Detailed surface investigations on the Tanana River revealed good correlations of echo delay with solid ice depth, but an insensitivity to frazil-ice depth due to its high water content. On the Yukon River, coinciding temporally coherent surface and bottom reflections were associated with solid ice and smooth surfaces. All cases of incoherent surface returns (scatter) occurred over ice rubble. Rough-surface scattering was always followed by the appearance of bottom scattering but, in many cases, including a hanging-wall formation of solid frazil ice, bottom scattering occurred beneath coherent, smooth-surface reflections. Areas of incoherent bottom scattering investigated by drilling revealed highly variable ice conditions, including frazil ice. The minimum ice thickness that could be resolved from the raw data was about 0.2 m with the 600 MHz antenna and less than 0.15 m with the 900 MHz antenna.

42-1831
Some observations on a recent surge of Peters Glacier, Alaska, U.S.A.
Echelmeyer, K., et al, *Journal of glaciology*, 1987, 33(115), p.341-345, 14 refs.
Butterfield, R., Cuillard, D.
Glacier surges, Basal sliding, Glacier beds, Ice mechanics, Rheology, Water pressure, Meltwater, Glacier ablation, United States—Alaska—Peters Glacier.

42-1832
Environmental constraints on West Antarctic ice-sheet formation.
Lindstrom, D.R., et al, *Journal of glaciology*, 1987, 33(115), p.346-356, 20 refs.
MacAyeal, D.R.
Sea level, Ice cover thickness, Ice sheets, Sea ice, Antarctica—West Antarctica.
The importance of sea-level, accumulation rate, and ice influx from the East Antarctic ice sheet in the re-establishment of the West Antarctic ice sheet from a thin cover is investigated using a time-dependent numerical ice-shelf model. Results show that a precursor to the West Antarctic ice sheet can form within 3000 years. Sea-level lowering caused by ice-sheet development in the Northern Hemisphere has the greatest environmental influence. Under favorable conditions, ice grounding occurs over all parts of the West Antarctic ice sheet except upstream of Thwaites Glacier and in the Ross Sea region. (Auth. mod.)

42-1833
Accumulation and temperature measurements on the James Ross Island ice cap, Antarctic Peninsula, Antarctica.
Aristarain, A.J., et al, *Journal of glaciology*, 1987, 33(115), p.357-362, 19 refs.
Pinglot, J.F., Pourchet, M.
Snow accumulation, Snow temperature, Radioactive isotopes, Ice sheets, Antarctica—James Ross Island.
Basic glaciological measurements from the James Ross I. ice cap are presented, including mean annual accumulation and firn temperature. In addition to the well-known radioactivity levels of Jan. 1955 and 1965 in antarctic snow, two new radioactivity levels corresponding to Jan. 1969 and Jan. 1974 are used in determining the accumulation values. The measurements reveal certain climatic features of this ice cap. (Auth.)

42-1834
Calculation of mass balance of glaciers by remote-sensing imagery using similarity of accumulation and ablation isoline patterns.
Krenke, A.N., et al, *Journal of glaciology*, 1987, 33(115), p.363-368, 6 refs.
Menshutin, V.M.
Glacier mass balance, Remote sensing, Glacier ablation, Glacier alimentation, Statistical analysis.

42-1835
Stress-strain relation for dry snow in Greenland and Antarctica.
Ling, C.-H., et al, *Journal of glaciology*, 1987, 33(115), p.369-373, 16 refs.
Rasmussen, L.A., Benson, C.S.
Stress strain diagrams, Snow density, Age determination.
A stress-strain relation for dry snow in Greenland and Antarctica was derived. When this relation is integrated, it gives snow density as a function of time. For given surface density, temperature, and accumulation, the age of snow layers can be obtained as a function of depth in the snow-pack. Calculations compare well with observations. With some knowledge of the temperature range in the upper layer of the snow-pack, calculation for density versus depth can also be improved over the results where such temperature information was not used. (Auth.)

42-1836
Microwave modelling of snow and soil.
Schanda, E., *Journal of electromagnetic waves and applications*, 1987, 1(1), p.1-24, 48 refs.
Microwaves, Scattering, Dielectric properties, Snow cover structure, Soil water.

42-1837
Introduction: the Laurentide Ice Sheet and its significance.
Fulton, R.J., et al, *Géographie physique et quaternaire*, 1987, 41(2), p.181-186, With French summary. 18 refs.
Prest, V.K.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1838
Introduction to the continental record of the Laurentide Ice Sheet.
St.-Onge, D.A., *Géographie physique et quaternaire*, 1987, 41(2), p.187-188, With French summary. 7 refs.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1839
Sangamonian Stage and the Laurentide Ice Sheet.
St.-Onge, D.A., *Géographie physique et quaternaire*, 1987, 41(2), p.189-198, With French and German summaries. 43 refs.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1840
Early Wisconsinan history of the Laurentide Ice Sheet.
Vincent, J.S., et al, *Géographie physique et quaternaire*, 1987, 41(2), p.199-213, With French and German summaries. 96 refs.
Prest, V.K.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1841
Middle Wisconsinan history of the Laurentide Ice Sheet.
Dredge, L.A., et al, *Géographie physique et quaternaire*, 1987, 41(2), p.215-235, With French and German summaries. 155 refs.
Thorleifson, L.H.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1842
Late Wisconsinan and Holocene history of the Laurentide Ice Sheet.
Dyke, A.S., et al, *Géographie physique et quaternaire,* 1987, 41(2), p.237-263, With French and German summaries. Refs. p.259-263.
Prest, V.K.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1843
Paleoenvironments along the eastern Laurentide Ice Sheet margin and timing of the last ice maximum and retreat.
De Vernal, A., et al, *Géographie physique et quaternaire,* 1987, 41(2), p.265-277, With French and German summaries. 54 refs.
Hillaire-Marcel, C.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1844
Conditions for growth and retreat of the Laurentide Ice Sheet.
Budd, W.F., et al, *Géographie physique et quaternaire,* 1987, 41(2), p.279-290, With French and German summaries. 86 refs.
Smith, I.N.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1845
Effects of the Laurentide Ice Sheet on North American climate during the last glacial maximum.
Broccoli, A.J., et al, *Géographie physique et quaternaire,* 1987, 41(2), p.291-299, With French and German summaries. 20 refs.
Manabe, S.
Ice sheets, Paleoclimatology, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1846
Dynamics of the Laurentide Ice Sheet from the Sangamonian to the Holocene. ¡Dynamique de l'Inlandsis Laurentidien du Sangamonien à l'Holocène¡,
Occhietti, S., *Géographie physique et quaternaire,* 1987, 41(2), p.301-313, In French with English and German summaries. Refs. p.311-313.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1847
Postface: the Laurentide Ice Sheet; research problems.
Andrews, J.T., *Géographie physique et quaternaire,* 1987, 41(2), p.315-318, With French summary. 48 refs.
Ice sheets, Quaternary deposits, Glacier oscillation, Glacial geology.

42-1848
Anchorage in massive permafrost. ¡Sposob ankerovki za massiv vechnomerzlogo grunta¡,
Kazakov, V.P., et al, *Transportnoe stroitel'stvo,* Dec. 1987, No.12, p.27-28, In Russian. 4 refs.
Poliakov, B.I., Goncharov, V.V.
Hydraulic structures, Moorings, Permafrost beneath structures, Anchors, Thermopiles.

42-1849
Heating devices used in bridge construction. ¡Primenenie nagrevatel'nykh priborov v proizvodstve mostovykh konstruktsiĭ¡,
Goriachev, S.I., *Transportnoe stroitel'stvo,* Dec. 1987, No.12, p.35-36, In Russian.
Concrete structures, Bridges, Reinforced concretes, Permafrost beneath structures, Winter concreting, Concrete heating, Concrete strength.

42-1850
Simulation of the present climate by a model of the ocean-atmosphere-ice system.
Verbitskiĭ, M.IA., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics,* 1986 (Pub. Dec. 1986), 22(5), p.348-354, Translated from its Izvestiia. Fizika atmosfery i okeana. 17 refs.
Chalikov, D.V.
Ice mechanics, Mathematical models, Climatology, Atmospheric circulation, Oceans, Hydrodynamics, Land ice.

42-1851
Non-uniqueness of climate in an ocean-atmosphere-ice system model.
Verbitskiĭ, M.IA., et al, *Akademiia nauk SSSR. Izvestiya. Atmospheric and oceanic physics,* 1986 (pub. Dec. 1986), 22(8), p.686-690, Translated from its Izvestiia. Fizika atmosfery i okeana. 5 refs.
Chalikov, D.V.
Climatology, Ocean environments, Atmospheric circulation, Land ice.

42-1852
Determination of the maximum ice-forming activity of metal oxides. Effect of modification of the surface of metal oxides on their ice-forming ability.
Gorbunov, B.Z., et al, *Colloid journal of the USSR,* Sep.-Oct. 1986 (Pub. Mar. 87), 48(5), p.852-856, Translated from Kolloidnyĭ zhurnal. 23 refs.
Kutsenogiĭ, K.P., Safatov, A.S.
Cloud seeding, Aerosols, Artificial nucleation.

42-1853
Effect of economic activity on heat and water regimes of individual developed territories of the eastern BAM route.
Novorotskiĭ, P.V., *Soviet meteorology and hydrology,* 1987, No.6, p.78-85, Translated from Meteorologiia i gidrologiia. 10 refs.
Forests, Human factors, Swamps, Cryogenic soils, Meadow soils, Baykal Amur railroad, Radiation balance, Surface temperature, Heat transfer, Solar radiation, Thermal regime, Soil water.

42-1854
Investigation of hail processes in the USSR.
Abshaev, M.T., et al, *Soviet meteorology and hydrology,* 1987, No.7, p.27-33, Translated from Meteorologiia i gidrologiia. 18 refs.
Fedchenko, L.M., Khorguani, V.G.
Supercooled clouds, Hail clouds, Hailstone growth, Hailstone structure, Hailstone electrification, Mathematical models.

42-1855
Formation of landslides, mudflows and avalanches. Engineering protection of territories. ¡Formirovanie opolzneĭ, seleĭ i lavin. Inzhenernaia zashchita territoriiĭ¡,
Zolotarev, G.S., ed, Moscow, Universitet, 1987, 180p., In Russian with abridged English table of contents enclosed. Refs. p.176-178.
Grigorian, S.S., ed, Miagkov, S.M., ed.
Mudflows, Avalanche engineering, Landslides, Slope processes, Avalanche formation, Avalanche triggering, Snow cover distribution, Snow depth, Models, Alpine landscapes, Charts, Maps.

42-1856
Heavy ice in the Baltic Sea. ¡Tiazhelyĭ led Baltiki¡,
Kotliarskiĭ, M., *Morskoĭ flot,* 1987, No.11, p.35-37, In Russian.
Ice navigation, Ice cover thickness, Sea ice distribution, Ice breaking.

42-1857
In high latitudes. ¡V vysokie shiroty¡, *Morskoĭ flot,* 1987, No.11, p.38-43, In Russian.
Ice navigation, Drift stations, Icebreakers, Exploration, Oceanographic ships, Expeditions, Nuclear power, Arctic Ocean.

42-1858
Phytomass of plant communities in the central part of eastern Taymyr and its spatial distribution. ¡Fitomassa rastitel'nykh soobshchestv tsentral'noĭ chasti vostochnogo Taĭmyra i osobennosti ee prostrantsvennogo razmeshcheniia¡,
Pospelova, E.B., et al, *Ekologiia,* Sep.-Oct. 1987, No.5, p.28-37, In Russian. 13 refs.
Orlov, M.V.
Tundra, Plant ecology, Biomass, Distribution, Landscape types.

42-1859
Productivity of typical Taymyr Peninsula tundras. ¡Produktivnost' tipichnykh tundr Taĭmyra¡,
Vil'chek, G.E., *Ekologiia,* Sep.-Oct. 1987, No.5, p.38-43, In Russian. 17 refs.
Tundra, Biomass, Plant ecology, Mosses, Landscape types, Lichens, Swamps, Cryogenic soils, Plant physiology, Roots.

42-1860
Results of studying biogeocenology and environmental protection in 1986. ¡Itogi issledovaniĭ po problemam biogeotsenologii i okhrany prirody v 1986 g.¡,
Nosova, L.M., *Ekologiia,* Sep.-Oct. 1987, No.5, p.57-65, In Russian.
Continuous permafrost, Tundra, Plant ecology, Environmental protection, Monitors, Subarctic landscapes, USSR—Yamal Peninsula.

42-1861
Ecologic problems of geobotanical mapping in the USSR. ¡Ekologicheskie problemy geobotanicheskogo kartografirovaniia v SSSR¡,
Nikonova, N.N., *Ekologiia,* Sep.-Oct. 1987, No.5, p.70-75, In Russian. 14 refs.
Maps, Mapping, Surveys, Geobotanical interpretation, Taiga, Tundra.

42-1862
Calculation of settling of embankment bases in the Far North. ¡Raschet osadok osnovaniĭ nasypeĭ na Kraĭnem Severe¡,
Kanaev, F.S., *Transportnoe stroitel'stvo,* Nov. 1987, No.11, p.14-16, In Russian.
Dams, Embankments, Foundations, Permafrost bases, Settlement (structural), Thermokarst, Design, Tundra, Forest tundra, Meadows, Swamps, Sporadic permafrost.

42-1863
Regularities governing snow accumulation at bridges in western Siberia. ¡Nekotorye zakonomernosti snegozanosimosti mostov v Zapadnoĭ Sibiri¡,
Drobyshevskiĭ, B.A., et al, *Transportnoe stroitel'stvo,* Nov. 1987, No.11, p.20-21, In Russian.
Ashepa, A.L., IAkovlev, S.I.
Snow cover distribution, Bridges, Snowdrifts, Snow accumulation, Design.

42-1864
Old problems on new construction sites. ¡Staryе problemy na novykh stroĭkakh¡, *Transportnoe stroitel'stvo,* Nov. 1987, No.11, p.34-36, In Russian.
Railroads, Permafrost beneath structures, Construction equipment, Cold weather construction, Winter maintenance, USSR—Yamal Peninsula.

42-1865
Today's responsibilities of construction-machine operators. ¡Segodniashnie zaboty mekhanizatorov¡,
Kazanovskaia, N.P., *Transportnoe stroitel'stvo,* Nov. 1987, No.11, p.37-40, In Russian.
Embankments, Paludification, Hydraulic structures, Construction equipment, Residential buildings, Permafrost distribution, Taiga, Baykal Amur railroad.

42-1866
Artificial snow situation in France. ¡Bilancio dell'innevamento artificiale in Francia¡,
Canova, A., et al, *Neve international,* 1987, No.4, p.33-35, In Italian with French, German and English summaries.
Turinaz, T.
Artificial snow, Snow manufacturing, Equipment, Skis, France.

42-1867
Organization of a safety and first aid service on ski slopes and collaboration with the military authorities. ¡Organizzazione di un servizio di sicurezza e soccorso sulle piste da sci e collaborazione con l'autorità militare¡,
Allegra, F., *Neve international,* 1987, No.4, p.36-40, In Italian with French, German and English summaries.
Avalanche formation, Safety, Accidents, Survival, Avalanche deposits, Skis, Protection, Injuries.

42-1868
Snowfall and freeze forecasting system for Japanese highway management in winter. ¡Nevicate e sistema di previsione del gelo per la gestione delle autostrade giapponesi d'inverno¡,
Miyata, K., et al, *Neve international,* 1987, No.4, p.41-48, In Italian with French, German and English summaries.
Wada, J.
Snowfall, Road maintenance, Winter maintenance, Weather forecasting, Analysis (mathematics), Computer applications, Japan.

42-1869
Technology of building foundations, for supports of power lines up to 500 kv, under complicated natural and climatic conditions. ¡Tekhnologiia sooruzheniia fundamentov opor VL napriazheniem do 500 kV v slozhnykh prirodno-klimaticheskikh usloviiakh¡,
Smirnov, V.N., *Energeticheskoe stroitel'stvo,* Oct. 1987, No.10, p.11-13, In Russian.
Power line supports, Foundations, Permafrost beneath structures, Active layer, Paludification.

42-1870
Possibility of sea-water addition to concrete mixes. ¡O vozmozhnosti primeneniia morskoĭ vody dlia zatvoreniia betona¡,
Rozental', N.K., *Energeticheskoe stroitel'stvo,* Oct. 1987, No.10, p.15-18, In Russian. 3 refs.
Brines, Concrete aggregates, Concrete structures, Reinforced concretes, Corrosion, Steels, Shores, Sea water.

42-1871
Performance of statically indeterminate reinforced concrete elements under severe climatic conditions. [Osobennosti raboty staticheski neopredelimykh zhelezobetonnykh elementov v rajonakh s surovymi klimaticheskimi usloviiami,
Korbukh, A.A., et al, *Energeticheskoe stroitel'stvo,* Oct. 1987, No.10, p.70-72, In Russian.
Denisova, V.N., Bulgakova, M.G., Guzeev, E.A.
Concrete structures, Reinforced concretes, Frost action, Freeze thaw cycles.

42-1872
USAC aerosurvey: accelerating exploration of the Antarctic.
LeBrecque, J.L., Lamont-Doherty Geological Observatory of Columbia University. [Yearbook], [Palisades, NY,] 1987, p.52-59, 3 refs.
Aerial surveys, Gravity anomalies, Magnetic anomalies, Mapping, Antarctica—Antarctic Peninsula.
A joint survey of the Antarctic Peninsula and its surrounding basins by the U.S., Argentina, and Chile has operated during the austral summers of 1986 and 1987. The survey intends to gather sufficient data over the region to provide detailed mapping of magnetic and gravity anomalies and from these to derive the structure, age, and evolutionary history of the region. Some details are provided of the progress thus far achieved for the Weddell and Scotia basins and the Bellingshausen margin.

42-1873
Model of ice rubble pileup.
Sayed, M., et al, *Journal of engineering mechanics,* Jan. 1988, 114(1), p.149-160, 19 refs.
Frederking, M.W.
Ice models, Ice pileup, Pressure ridges, Floating ice, Shear stress, Analysis (mathematics).

42-1874
Methods for the study of water in ice phases.
Kuhs, W.F., *Methods in enzymology,* 1986, Vol.127, Biomembranes. Part 0: Protons and water; structure and translocation. Edited by L. Packer, p.303-318, 66 refs.
Ice physics, Ice crystal structure, Solid phases, Phase transformations, Ice water interface, Spectroscopy, Ice crystal nuclei, Ice crystal growth, Temperature effects.

42-1875
Ice action on fixed offshore structures: a state-of-the-art review.
Nessim, M.A., et al, *Canadian journal of civil engineering,* June 1987, 14(3), p.381-407, With French summary. Refs. p.405-407.
Cheung, M.S., Jordaan, I.J.
Ice loads, Offshore structures, Ice solid interface, Ice mechanics, Design criteria, Ice conditions, Pressure ridges, Analysis (mathematics).

42-1876
Concrete—quo vadis?—pre and post-ICPIC '87.
Raymond, J., *Concrete,* Sep. 1987, 21(9), p.16-20, 13 refs.
Concrete durability, Freeze thaw cycles, Concrete aggregates, Polymers, Resins, Road maintenance, Concrete strength, Protective coatings.

42-1877
Effect of time and temperature on nitrogen mineralization in Arctic tundra soils.
Marion, G.M., et al, *Soil Science Society of America. Journal,* Nov.-Dec. 1987, 51(6), p.1501-1508, 32 refs.
Black, C.H.
Tundra, Nutrient cycle, Soils, Mathematical models, Time factor, Temperature effects.

42-1878
Technique and instrument for determining the thermophysical properties of foam-type insulation materials.
Shashkov, A.G., et al, *Heat transfer—Soviet research,* July-Aug. 1987, 19(4), p.138-143, 4 refs. Translated from Promyshlennaia teplotekhnika, 1986, 8(4), p.47-50.
Voltenko, A.G.
Thermal insulation, Cellular plastics, Thermal properties, Physical properties, Measuring instruments, Analysis (mathematics).

42-1879
Rating system for unsurfaced roads to be used in maintenance management.
Eaton, R.A., et al, MP 2313, North American Conference on Managing Pavements, 2nd, Toronto, Ontario, Nov. 2-6, 1987. Proceedings, Vol.2, [1987], p.(2)51-(2)62, 24 refs.
Gerard, S., Dattilo, R.S.
Road maintenance, Pavements, Drainage, Surface properties.
A system has been developed and field validated for rating unsurfaced roads. The number obtained for each road by using this system can be used to prioritize or compare road conditions to develop a maintenance program. This unsurfaced road rating system can be used by itself or to supplement current pavement management systems.

42-1880
Icebreaker: Chevron's ICE-B-GON makes winter driving safer.
Sachtleben, L., *Chevron world,* Winter 1988, 65(1), p.10-11.
Road maintenance, Ice removal, Salting, Winter maintenance, Pollution, Chemical analysis, Cost analysis, Ice prevention.

42-1881
Pavement design for low-volume roads that considers the antifrost effects of thickly packed snow.
Takeichi, K., et al, *Transportation research record,* 1987, No.1106, International Conference on Low-Volume Roads, 4th, Ithaca, NY, Aug. 16-20, 1987. Proceedings, Vol.1, p.237-243, 9 refs.
Kubo, H., Kasahara, A.
Pavements, Snow cover effect, Frost heave, Cold weather construction, Road maintenance, Freezing indexes, Design, Frost penetration, Countermeasures.

42-1882
Role of seasonal salt and water fluxes in the genesis of Solonetzic B horizons.
Fullerton, S., et al, *Canadian journal of soil science,* Nov. 1987, 67(4), p.719-730, With French summary. 28 refs.
Pawluk, S.
Saline soils, Soil chemistry, Soil water migration, Ground water, Seasonal variations, Soil temperature, Canada—Alberta.

42-1883
Sound propagation in water-ethanol mixtures at low temperatures. I. Ultrasonic velocity.
D'Arrigo, G., et al, *Journal of chemical physics,* Jan. 1, 1988, 88(1), p.405-415, 52 refs.
Paparelli, A.
Sound transmission, Ultrasonic tests, Supercooling, Solutions, Water temperature, Wave propagation, Velocity, Compressive properties, Analysis (mathematics).

42-1884
Simultaneous determination of chloride, bromide and iodide in snow fall by XRF after the precipitation of their silver salts.
Yamamoto, T., *Bunseki kagaku,* Oct. 1987, 36(10), p.592-596, In Japanese with English summary. 6 refs.
Snow composition, Chemical analysis, Laboratory techniques.

42-1885
Visualization of the boundary layer on the growing ice.
Bednarz, G., et al, *Crystal research and technology,* Sep. 1987, 22(9), p.K145-K147, 5 refs.
Krasinski, M.J.
Ice water interface, Solutions, Ice formation, Ice crystals.

42-1886
Beyond the ice sheet.
Barnes-Svarney, P., *Earth science,* Summer 1986, 39(2), p.18-19.
Periglacial processes, Ice sheets, Frost action.

42-1887
Thermal modelling of cometary activity with a crystallized water ice nucleus.
Yabushita, S., et al, *Earth, moon, and planets,* Feb. 1987, 37(2), p.141-146, 18 refs.
Hatta, N.
Extraterrestrial ice, Models.

42-1888
Optical constants of the mixture of ices.
Mukai, T., et al, *Earth, moon, and planets,* Oct. 1986, 36(2), p.145-155, 9 refs.
Kritschmer, W.
Extraterrestrial ice, Ice optics.

42-1889
Calculational study of time-dependent neutron spectra in ice at low temperature.
Sakamoto, S., et al, *Journal of nuclear science and technology,* Nov. 1987, 24(11), p.872-880, 23 refs.
Neutron scattering, Ice spectroscopy, Lattice models.

42-1890
Vector-controlled cycloconverter drive for an icebreaker.
Hill, W.A., et al, *IEEE transactions on industry applications,* Nov.-Dec. 1987, IA-23(6), p.1036-1042, 4 refs.
Turton, R.A., Dungan, R.J., Schwalm, C.L.
Icebreakers, Engines, Propellers.

42-1891
Structure and dynamics of amorphous water ice.
Laufer, D., et al, *Physical review B,* Dec. 15, 1987, 36B(17), p.9219-9227, 20 refs.
Kochavi, E., Bar-Nun, A.
Ice formation, Amorphous ice, Ice structure.

42-1892
Snapshot of the Labrador Current inferred from ice-floe movement in NOAA satellite imagery.
Peterson, I., *Atmosphere-ocean,* Dec. 1987, 25(4), p.402-415, With French summary. 14 refs.
Ice floes, Drift, Ocean currents, Spaceborne photography.

42-1893
Observation of sea-ice dynamics using synthetic aperture radar images: automated analysis.
Vesecky, J.F., et al, *IEEE transactions on geoscience and remote sensing,* Jan. [illegible], p.38-48, 10 refs.
Sea ice distribution, Drift, Radar tracking.

42-1894
Bedrock relief of Enderby Land, Mac. Robertson Land and Princess Elizabeth Land, East Antarctica. [Korennoi rel'ef Zemli Enderbi, Zemli Mak-Robertsona i Zemli Printsessy Elizavety v Vostochnoi Antarktide],
Kurinin, R.G., et al, *Antarktika; doklady komissii,* 1987, No.26, p.62-65, In Russian. 4 refs.
Aleshkova, N.D.
Maps, Tectonics, Bottom topography, Subglacial observations, Antarctica—Enderby Land, Antarctica—Lambert Glacier, Antarctica—Mac. Robertson Land.
A map of the subglacial topography of Enderby Land, Mac. Robertson Land, Lambert Glacier and adjacent areas, compiled with data from seismic and radio-echo soundings carried out between 1968 and 1977, is presented and discussed. The basic morphology of the area is described, with the suggestion that it had been determined by the nature of the regional tectonic developments. The rising of sub-latitudinal and sub-meridional, deeply depressed, basins of Enderby Land is linked to the ice cover formation, which resulted in crustal cracking of the continental margins. The discussion of riftogenetic processes includes the Lambert Glacier region as an example.

42-1895
New data on ice sheet morphology, bedrock and bottom relief in the southern Weddell Sea basin, West Antarctica. [Novye dannye o morfologii ledovoi tolshchi i rel'efe podlednogo lozha i morskogo dna v iuzhnoi chasti basseina moria Ueddella (Zapadnaia Antarktida)],
Pozdeev, V.S., et al, *Antarktika; doklady komissii,* 1987, No.26, p.66-71, In Russian. 8 refs.
Kurinin, R.G.
Bottom topography, Ice cover thickness, Ice shelves, Antarctica—Weddell Sea.
Maps of the ice cover and bottom topography of Weddell Sea, the ice cover thickness of Filchner and Ronne ice shelves and adjacent mountains and glaciers, are discussed. A relationship between height and depth of the ice shelf, and length of time of seismic and electromagnetic wave transmission through the ice, is established. The possible causes of different morphological and structural forms of the bedrock topography are considered. Evidence is found for brine infiltration into the inner layers of the ice shelves, which distorts the true values of their vertical dimensions.

42-1896
Ice rheology parameters from long term borehole studies at Vostok Station. [Otsenka reologicheskikh parametrov l'da po rezul'tatam mnogoletnikh nabliudenii v skvazhinakh na st. Vostok v Antarktide],
Blinov, K.V., et al, *Antarktika; doklady komissii,* 1987, No.26, p.95-106, In Russian. 15 refs.
Dmitriev, D.N.
Ice creep, Ice deformation, Rheology, Boreholes, Antarctica—Vostok Station.
Ice creep curves, plotted from borehole wall deformation data obtained for the period 1974-1984, are analyzed. Basic rheological parameters of the flow law of ice are calculated for the area investigated, and it is shown that it is possible to use them to predict stress-induced ice deformations around boreholes.

42-1897
Investigation of cavity formation in the ice sheet for liquid or gas sampling. [Issledovanie protsessa formirovaniia kaverny v ledovom massive dlia otbora proby zhidkosti ili gaza],
Chistiakov, V.K., et al, *Antarktika; doklady komissii,* 1987, No.26, p.107-112, In Russian. 2 refs.
Chugunov, V.A., Zemtsov, A.A.
Ice models, Ice melting, Cavitation, Heat transfer.
As part of a study of the dynamics of cavity melting in the ice sheet, to increase the effectiveness of liquid or gas sampling, an approximate mathematical model is discussed, and illustrated, of the process of heat and mass transfer in the circulation of a liquid convective heating agent. Theoretical and experimental results are shown to be in good agreement.

42-1898
Average height, volume and thickness of antarctic ice (new data). [Srednisia vysota, ob"em i moshchnost' l'da Antarktidy (novye dannye),
Suetova, I.A., *Antarktika; doklady komissii,* 1987, No.26, p.113-119, In Russian. 11 refs.
Ice surveys, Topographic surveys.
Based on cartographic information obtained in the last 20 years, the following morphometric data on Antarctica are tabulated and discussed: the average height of ice and rock surface, the ice volume and average thickness, and the amplitude of glacio-eustatic variations. The methods of measurement are described, and their accuracy is evaluated.

42-1899
Ice sheet composition and structure in the Schirmacher Ponds area. [Sostav i stroenie materikovogo l'da v raĭone oazisa Shirmakhera (Antarktida),
Vtiurin, B.I., et al, *Antarktika; doklady komissii,* 1987, No.26, p.120-129, In Russian. 27 refs.
Hermichen, W.D., Kowski, P.
Lake ice, Ice composition, Ice structure, Antarctica—Schirmacher Ponds.
Study of isotope composition and structure of the ice sheet and shelf ice of Schirmacher Ponds shows that the basal layers of ice 10 or more meters thick consist of fossil ice thicker than the contemporary, post-Pleistocene ice cover of Queen Maud Land. The upper portion of the ice sheet north of the Wohlthat Mountains and the upper 150 m of Lazarev Ice Shelf were formed by regional accretion of post-Pleistocene precipitation.

42-1900
Thermomechanics of icebergs. [Termomekhanika aĭsbergov],
Krass, M.S., *Antarktika; doklady komissii,* 1987, No.26, p.130-147, In Russian. 32 refs.
Icebergs, Ice thermal properties, Iceberg towing, Ice mechanics.
A review of thermal and physical properties of icebergs shows that the meltwater under a freely floating iceberg can have a heat screening effect. The ablation of surface ice of a towed iceberg, especially in view of underwater melting, significantly decreases the strength of the ice. Under conditions of prolonged towing, the deterioration and final destruction of the iceberg are found to be unavoidable. Thus, to consider icebergs as a potential source of fresh water over long distances is found to be entirely impractical.

42-1901
Ecological peculiarities of mycelial fungi from antarctic ice. [Ob ekologicheskikh osobennostiakh mitselial'nykh gribov iz tolshchi antarkticheskogo lednika],
Abyzov, S.S., et al, *Antarktika; doklady komissii,* 1987, No.26, p.157-160, In Russian. 25 refs.
Belikova, L.A.
Cryobiology, Ice cores, Antarctica—Vostok Station.
Microbiological analysis of a core from Vostok Station disclosed a variety of species of mycelial fungi in a state of deep anabiosis contained in the ice at -55 C over a long period of time. A comparison of these microorganisms with samples from more temperate latitudes established their ability to grow in a wide temperature range. However, the ability to thrive at very low temperatures is peculiar to samples collected in Antarctica. It is concluded that this is due to anabiosis which allowed those microorganisms to maintain their biological characteristics and to adapt to extreme conditions before their entrapment in the ice.

42-1902
Atmospheric energetics in polar regions. [Energetika atmosfery v poliarnykh oblastiakh],
Romanov, V.F., et al, Leningrad, Gidrometeoizdat, 1987, 296p., In Russian. Refs. p.282-294.
Ariskina, N.V., Vasil'ev, V.F., Lagun, V.E.
Sea ice, Polynyas, Polar regions, Antarctica—Weddell Sea.
Experimental data collected during the POLEX program are reviewed and analyzed, covering the following: characteristics of spatial structure of the Antarctic Circumpolar Current, determined by analysis of long series of measurements of currents in the southern ocean; computed zonal mean zonal and meridional components of wind speed representing different seasons; interactions of the atmosphere, ice, and the oceans in polar regions, with emphasis on sea ice, the polar energy balance, and meridional heat exchange processes. Specific to Antarctica, the Soviet-American expedition to the Weddell Sea during Oct.-Nov. 1981 is described in Ch. 4. Atmospheric synoptic eddies and energetics over the sea were studied, including ocean-atmosphere interrelationships such as atmospheric circulation effects on the formation of polynyas in the Weddell Sea. Equations are developed to demonstrate the generation of available potential energy due to turbulent transfer of sensible heat from the ocean to the atmosphere in an ocean cyclone. Charts of cyclone tracks and frequency of cyclones and anticyclones in the Southern Hemisphere are presented.

42-1903
Sedimentation in ice-covered Lake Hoare, Antarctica.
Nedell, S.S., et al, *Sedimentology,* Dec. 1987, 34(6), p.1093-1106, 20 refs.
Andersen, T.W., Squires, S.W., Love, F.G.
Cryobiology, Lake ice, Sediment transport, Ice structure, Antarctica—Hoare, Lake.
The sedimentation mechanisms that occur in ice-covered Lake Hoare are examined to determine how sediment enters the lake, and how the sedimentation pattern affects blue-algal growth at the lake bottom. The 3 m-thick ice cover contains pebbly sand as much as 2 m below the surface. Sediment with similar texture and mineralogy is found at the lake bottom. This evidence, together with the lack of sediment in the inflowing stream and the markedly different texture of sediment from the other terrains around the lake suggest that most of the sediment at the lake bottom comes in through the ice cover. Sand grains intermittently migrate through porous ice on the surface, water-filled vertical gas-channels penetrating two-thirds of the ice cover, and possibly through cracks in the ice that act as conduits. The algae at the lake bottom are able to survive in part because sediment that comes through the ice cover does not obliterate them. (Auth.)

42-1904
Algal assemblages in antarctic pack ice and in ice-edge plankton.
Garrison, D.L., et al, *Journal of phycology,* Dec. 1987, 23(4), p.564-572, 37 refs.
Buck, K.R., Fryxell, G.A.
Sea ice distribution, Ice cover effect, Algae.
Algal assemblages in ice and water in the Weddell Sea during the austral spring of 1983 at a receding ice edge are compared with a well-developed ice edge bloom. The dynamics of these blooms appear to be closely related to seasonal melting of sea ice. The high degree of similarity between ice and water column assemblages, the spatial and temporal patterns in the distribution and abundances of species, and preliminary evidence for the viability and growth of ice-associated species provide evidence for seeding from sea ice of some species in Antarctica. (Auth. mod.)

42-1905
Ice thickness distribution across the Atlantic sector of the Antarctic Ocean in midwinter.
Wadhams, P., et al, *Journal of geophysical research,* Dec. 15, 1987, 92(C13), MP 2314, p.14,535-14,552, 9 refs.
Lange, M.A., Ackley, S.F.
Ice cover thickness, Sea ice, Ice floes, Photography.
The entire width of the antarctic sea ice zone was traversed in the vicinity of 0 deg longitude from July 18 to Sep. 10, 1986. Ice thicknesses were measured by direct drilling, by helicopter profiling using an Exstar 100-MHz impulse radar system and by aerial photography. The results of the point measurements (drilling) are reported in this paper together with an indication of how the radar and photography data will be used to extend them so as to yield area-averaged ice thickness distributions. The main ice type across the entire width of the ice cover was consolidated pancake ice occurring in vast floes; this formed out of a 250-km-wide band at the advancing ice edge which comprised a concentrated field of individual pancakes in a matrix of frazil ice. Preferred thicknesses of undeformed floes were 40-60 cm of ice covered with 5-15 cm of snow. The individual pancakes attained almost all of this thickness before consolidation; subsequent congelation growth was slow, estimated at 0.4 cm/d. The floes contained much small-scale roughness on the upper and lower surfaces due to rafting of pancakes at the time of consolidation, but pressure ridging was modest except in the far south. A few very thick (8-11 m) multiyear floes were observed embedded in the pack at latitudes beyond 66S. (Auth.)

42-1906
Multiyear sea ice floe distribution in the Canadian Arctic Ocean.
Hudson, R.D., *Journal of geophysical research,* Dec. 15, 1987, 92(C13), p.14,663-14,669, 5 refs.
Sea ice, Ice floes, Aerial surveys, Arctic Ocean.

42-1907
Anchor ice, seabed freezing, and sediment dynamics in shallow Arctic seas.
Reimnitz, E., et al, *Journal of geophysical research,* Dec. 15, 1987, 92(C13), p.14,671-14,678, 40 refs.
Kempema, E.W., Barnes, P.W.
Bottom ice, Sediments, Beaufort Sea.

42-1908
Maintaining frozen assets.
Wells, M., *Defence,* Dec. 1987, 18(12), p.776-779.
Military operation, Skis.

42-1909
Sub-zero helicopter operations.
Witt, M., *Defence,* Dec. 1987, 18(12), p.780-783.
Military operation, Helicopters, Aircraft icing.

42-1910
Holocene evolution of permafrost near the tree line, on the eastern coast of Hudson Bay (northern Quebec).
Allard, M., et al, *Canadian journal of earth sciences,* Nov. 1987, 24(11), p.2206-2222, With French summary. 52 refs.
Seguin, M.K.
Permafrost origin, Soil dating, Geomorphology, Forest tundra.

42-1911
Shallow sediment temperature perturbations and sediment thermal conductivities, Canadian Beaufort Shelf.
Taylor, A.E., et al, *Canadian journal of earth sciences,* Nov. 1987, 24(11), p.2223-2234, With French summary. 51 refs.
Allen, V.
Subsea permafrost, Bottom sediment, Water temperature.

42-1912
Drumlin formation by subglacial meltwater erosion.
Shaw, J., et al, *Canadian journal of earth sciences,* Nov. 1987, 24(11), p.2316-2322, With French summary. 17 refs.
Shape, D.R.
Subglacial drainage, Glacial erosion, Subglacial caves.

42-1913
Simulation of the statistical failure of snow slopes.
Smith, F.W., et al, *Simulation series,* Jan. 1985, 15(1), Conference on Emergency Planning, San Diego, CA, Jan. 24-26, 1985. Proceedings. Edited by J.M. Carroll, p.29-33, 17 refs.
Sommerfeld, R.A.
DLC HV553.C67
Computerized simulation, Avalanche formation, Slope stability, Snow cover stability, Shear strength, Snow strength, Forecasting, Snow density.

42-1914
Computerized streamflow forecasting model for Windy Cap Project, Colorado.
Eckhardt, J.R., et al, *Simulation series,* Jan. 1985, 15(1), Conference on Emergency Planning, San Diego, CA, Jan. 24-26, 1985. Proceedings. Edited by J.M. Carroll, p.125-127, 2 refs.
Leaf, C.F.
DLC HV553.C67
Stream flow, Computerized simulation, Snowmelt, Snow cover effect, Forecasting, Hydrology.

42-1915
Arctic science policy and development. Proceedings.
UNESCO-MAB International Conference, Fairbanks, AK, Aug. 28-30, 1985, Washington, D.C., U.S. Man and the Biosphere Program, Dec. 1986, 104p., PB87-218244, Refs. passim.
Freeman, M.M.E., comp, Slaughter, C.W., comp.
Research projects, Legislation, International cooperation, Polar regions, Ecosystems, Meetings.

42-1916
Electric field alignment of ice particles in thunderstorms.
Weinheimer, A.J., et al, *Journal of geophysical research,* Dec. 20, 1987, 92(D12), p.14,833-14,844, 44 refs.
Few, A.A.
Ice crystals, Thunderstorms, Electric fields.

42-1917
Analysis of ice forming phenomena and their applications. [Hyoketsu gensho no kaiseki to sono oyo],
Matsuno, R., *Agricultural Chemical Society of Japan. Journal (Nippon Nogei Kagakukaishi),* Sep. 1987, 61(9), p.1123-1125, In Japanese. 14 refs.
Liquid solid interfaces, Ice formation, Ice nuclei, Ice growth, Freezing.

42-1918
Theoretical model for freezing process and ice crystal formation. [Toketsu katei no tsuiseki to seisei koori kessho],
Miyawaki, O., et al, *Agricultural Chemical Society of Japan. Journal (Nippon Nogei Kagakukaishi),* Sep. 1987, 61(9), p.1126-1128, In Japanese. 22 refs.
Yano, T.
Ice crystal size, Freezing rate, Freezing, Mathematical models, Food.

42-1919
Secondary nucleation and growth of ice crystals for freeze concentration. [Koori shoketsu no niji kaku hassei oyobi seicho to toketsu noshuku],
Shirai, Y., *Agricultural Chemical Society of Japan. Journal (Nippon Nogei Kagakukaishi),* Sep. 1987, 61(9), p.1129-1132, In Japanese. 9 refs.
Frozen liquids, Ice crystal growth, Condensation, Freezing rate, Ice crystal size, Freezing, Ice crystal nuclei, Mathematical models, Food.

42-1920
Antifreeze substances. [Koori seisei sogai busshitsu],
Arai, S., et al, *Agricultural Chemical Society of Japan. Journal (Nippon Nogei Kagakukaishi)*, Sep. 1987, 61(9), p.1133-1135, In Japanese. 22 refs.
Watanabe, M.
Antifreezes, Surfactants, Ice crystal size, Freezing rate, Emulsions, Cells.

42-1921
Ice-nucleating bacteria. [Hyokaku kassei saikin],
Obata, H., et al, *Agricultural Chemical Society of Japan. Journal (Nippon Nogei Kagakukaishi)*, Sep. 1987, 61(9), p.1136-1138, In Japanese. 14 refs.
Tokuyama, T.
Frost action, Plants (botany), Bacteria, Organic nuclei, Frost protection, Sterilizers.

42-1922
Cold acclimation of perennial plants. [Koto shokubutsu no teion junka],
Sagisaka, S., *Agricultural Chemical Society of Japan. Journal (Nippon Nogei Kagakukaishi)*, Sep. 1987, 61(9), p.1139-1142, In Japanese. 13 refs.
Plants (botany), Frost resistance, Acclimatization, Water content, Cold weather survival, Cells, Enzymes.

42-1923
In-place recycled surface course technique applied to strip paving. [Rojo hyoso saisei koho no reru biki e no tekiyo],
Hamaguchi, S., et al, *Road construction (Doro kensetsu)*, May 1984, No.436, p.77-83, In Japanese. 9 refs.
Yamada, M.
Pavements, Tires, Road maintenance, Bitumens, Heating, Damage, Compaction.
Obayashi Road Construction Co. developed a low-cost technique to repair road erosion caused by studded tires. A pavement repairing machine heats and scarifies uncorroded asphalt for on-site recycling. The width and the depth of strips to be repaired can be adjusted. Better joints (places where repaved surface meets the existing pavement) were obtained by heating the area of joints wider than the width of strips actually repaired.

42-1924
Embedded pipe snow melting systems. [Onsui paipu yusetsu],
Kodera, T., *Nagaoka Technical College. Research reports (Nagaoka Kogyo Koto Senmon Gakko kenkyu kiyo)*, June 1985, 21(2), p.107-109, In Japanese.
Snow melting, Artificial melting, Heat pipes, Underground pipelines, Mathematical models, Roads, Sidewalks.

42-1925
Experimental plan of snow melting systems. [Yusetsu shisutemu jikken keikaku],
Kodera, T., *Nagaoka Technical College. Research reports (Nagaoka Kogyo Koto Senmon Gakko kenkyu kiyo)*, June 1985, 21(2), p.113-115, In Japanese.
Trenching, Snow melting, Test equipment, Heat pipes, Artificial melting, Sprinklers, Roads, Water pipes, Sidewalks, Experimentation.

42-1926
Experiment on infiltration capacity of snow pack. [Yuki no shintono ni kansuru jikken],
Kodera, T., *Nagaoka Technical College. Research reports (Nagaoka Kogyo Koto Senmon Gakko kenkyu kiyo)*, June 1985, 21(2), p.117-120, In Japanese.
Seepage, Snow permeability, Trenching, Snow density, Experimentation, Stream flow.

42-1927
On reducing operating costs of electric snow melting devices. [Denki yusetsuki denki ryokin no setsugen saku ni tsuite],
Matsuura, H., *Electric railways (Denki tetsudo)*, Dec. 1984, 38(12), p.11-13, In Japanese.
Snow melting, Cost analysis, Artificial melting, Electric heating, Sprinklers, Japan—Hokuriku.

42-1928
Life and transportation in snowy regions. [Yukiguni no seikatsu to kotsu],
Anada, A., *Road (Doro)*, July 1984, No.521, p.31-35, In Japanese.
Road maintenance, Winter maintenance, Transportation, Snow removal, Snow disposal, Japan—Toyama Prefecture.

42-1929
Road maintenance in a snowy region. [Gosetsuchi ni okeru doro no iji kanri],
Kobayashi, Y., *Road construction (Doro kensetsu)*, June 1985, No.449, p.68-69, In Japanese.
Roofs, Snow removal, Avalanches, Snow disposal, Roads, Japan—Niigata Prefecture.

42-1930
True state of winter transportation. [Toki kotsu no jittai],
Yano, Y., *Asphalt (Asufaruto)*, Dec. 1983, 26(138), p.8-12, In Japanese.
Tires, Snow removal, Transportation, Winter maintenance, Road maintenance, Roads, Accidents, Motor vehicles.

42-1931
Countermeasures against road erosion in snowy, cold regions: studded tire problem. [Sekisetsu kanrei chiiki ni okeru hoso no mamo taisaku—(supaiku taiya taisaku)],
Fujishiro, Y., *Asphalt (Asufaruto)*, Dec. 1983, 26(138), p.31-38, In Japanese. 3 refs.
Tires, Pavements, Legislation, Road maintenance, Snow removal, Damage, Brakes (motion arresters).

42-1932
Road construction in cold regions. [Kanreichi ni okeru doro ga dekiru made],
Kubo, H., *Soil mechanics and foundation engineering (Tsuchi to kiso)*, Jan. 1985, 33(1), p.17-21, In Japanese. 11 refs.
Roads, Pavements, Cold weather construction, Bitumens, Sidewalks, Frost heave, Tunnels, Embankments, Design, Pavement bases, Slopes, Volcanic ash, Sands, Visibility, Gravel, Subsurface drainage.

42-1933
Structure, origin and evolution of the ice-bearing loess formation in northern Asia. [Struktura, genezis i evoliutsiia lessovo-lednikovoi formatsii severa Azii],
Tomirdiaro, S.V., et al, Tsiklichnost' noveishikh subaeral'nykh otlozhenii. Nauchnye i prikladnye aspekty problemy (Cyclic nature of the latest subaerial deposits. Scientific aspects and applications) edited by I.A. Volkov, Novosibirsk, Nauka, 1987, p.61-68, In Russian. 13 refs.
Chernen'kii, B.I.
Loess, Polygonal topography, Geocryology, Permafrost distribution, Continuous permafrost, Permafrost structure, Ice veins, Edoma complex, Origin, Theories, USSR—Yakutia, USSR—Chukotskiy Peninsula.

42-1934
Ice roads with a thermal insulation layer. [Ledianye dorogi s teploizoliatsionnym sloem],
Razzhivin, M.E., *Lesnaia promyshlennost'*, 1986, No.10, p.21, In Russian.
Ice roads, Snow roads, Roadbeds, Embankments, Pavements, Ice accretion, Construction equipment, Artificial ice, Ice (construction material).

42-1935
Preparation of ground for winter excavation of pits. [Podgotovka gruntovykh kar'erov k razrabotke zimoi],
Migliachenko, V.P., *Lesnaia promyshlennost'*, 1986, No.8, p.13, In Russian.
Frozen ground, Pits (excavations), Frost protection, Thermal insulation, Snow cover effect, Antifreezes.

42-1936
Construction and operation of temporary forest roads. [Stroitel'stvo i ekspluatatsiia vremennykh lesovoznykh dorog],
Vishniakov, A.S., *Lesnaia promyshlennost'*, 1986, No.8, p.14, In Russian.
Forest soils, Roadbeds, Embankments, Ice roads, Winter maintenance, Artificial ice, Pavements.

42-1937
Service life of winter roads built for timber transportation. [Srok deistviia zimnikh lesovoznykh dorog],
Iakovenko, IU.G., *Lesnaia promyshlennost'*, 1986, No.3, p.14, In Russian.
Forest soils, Roads, Swamps, Roadbeds, Embankments, Frost penetration, Soil strength.

42-1938
Roadbed construction in freezing weather. [Vozvedenie zemlianogo polotna v zimnii period],
Migliachenko, V.P., *Lesnaia promyshlennost'*, 1987, No.7, p.22-23, In Russian.
Forest soils, Roadbeds, Cold weather construction, Winter maintenance, Frost penetration, Cements, Cement admixtures, Construction equipment.

42-1939
Operation of gas wells under permafrost conditions. [Ekspluatatsiia gazovykh skvazhin v usloviiakh mnogoletnemerzlykh porod],
Vakhrushev, A.M., *Bezopasnost' truda v promyshlennosti*, Sep. 1987, No.9, p.34, In Russian.
Gas wells, Frozen ground settling, Permafrost, Active layer, Petroleum industry, Freeze thaw cycles.

42-1940
Dependence of freezing of massive rocks on their hydrophysical properties. [Zavisimost' smerzaniia gornoi massy ot ee vodofizicheskikh svoistv],
Panchenko, D.F., et al, *Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh*, July-Aug. 1987, No.4, p.115-117, In Russian. 3 refs.
Vasilenko, L.I.
Frozen fines, Frozen rock strength, Clays, Porosity, Water content, Phase transformations, Experimentation.

42-1941
Gas-reconnaissance survey over snow-covered ground in southern West Siberia. [Gazovaia s"emka po snegu na iuge Zapadnoi Sibiri],
Vyshemirskii, V.S., et al, *Geologiia i geofizika*, June 1987, No.6, p.17-23, In Russian with English summary. 3 refs.
Shugurov, V.F.
Exploration, Surveys, Hydrocarbons, Gases, Snow composition, Chemical analysis, Petroleum products, Petroleum industry.

42-1942
Useful experience in mapping permafrost-hydrogeological conditions. [Poleznyi opyt otobrazheniia merzlotno-gidrogeologicheskikh uslovii],
Pinneker, E.V., et al, *Geologiia i geofizika*, May 1987, No.5, p.134-136, In Russian.
Alekseeva, L.P.
Naleds, Mapping, Permafrost depth, Permafrost distribution, Permafrost hydrology, Permafrost structure, Ground ice.

42-1943
Applying electromagnetic soundings to the study of bedrock relief in permafrost areas. [Primenenie elektromagnitnykh zondirovanii dlia izucheniia rel'efa korennykh porod v raionakh razvitiia mnogoletnei merzloty],
Veshev, A.V., et al, *Leningrad. Universitet. Vestnik*, Mar. 1987, 1(7), p.81-85, In Russian. 7 refs.
Beliakov, V.I.
Engineering geology, Electromagnetic prospecting, Permafrost physics, Electrical properties.

42-1944
Rheological properties of ice containing surfactant admixtures. [Reologicheskie svoistva l'da s dobavkami PAV],
Dediulia, I.V., et al, *Kolloidnyi zhurnal*, May-June 1987, 49(3), p.559-563, In Russian with English summary. 6 refs.
Churaev, N.V.
Surfactants, Capillary ice, Ice formation, Ice structure, Water, Capillarity, Solutions.

42-1945
On the conditions required for heterogeneous ice nucleation from vapor. [O neobkhodimom uslovii geterogennoi nukleatsii l'da iz para],
Kim, N.S., et al, *Kolloidnyi zhurnal*, Mar.-Apr. 1987, 49(2), p.253-257, In Russian with English summary. 25 refs.
Shkodkin, A.V.
Aerosols, Nucleation, Ice nuclei, Ice formation.

42-1946
Analysis of space-based radar clutter spectra over different types of terrain and their effects on detection performance.
Faubert, D., et al, *Communications Research Centre, Ottawa, Ontario. Report*, Nov. 21, 1986, CRC-1408, 47p. ADA-178 066/7/XAB.
Rook, B.J., Tam, W.
Radar echoes, Ice cover effect, Snow cover effect, Topographic features, Spectra, Computer applications, Detection, Models.

42-1947
Lake ice occurrence as an early detector of climate perturbation: the potential for monitoring. Final report.
Barry, R.G., *U.S. Dept. of Energy. Report*, Jan. 1987, DOE/ER/60106-5, 29p. DE87-004 503/XAB.
Lake ice, Ice formation, Climatic changes, Freezeup, Ice breakup, Temperature effects, Cloud cover, Seasonal variations.

42-1948
Study of the microwave brightness temperature of sea ice.
Stogryn, A., *Aerojet ElectroSystems Co., Azusa, CA. Report*, Dec. 1986, AESC-8362, 60p. ADA-178 271/3/XAB.
Sea ice, Microwaves, Ice conditions, Remote sensing, Brightness, Temperature effects, Dielectric properties, Brines, Electromagnetic properties, Analysis (mathematics).

42-1949
Workshop on Microwave Scattering and Emission from the Earth's Surface held in Washington, D.C., on 11-12 April 1985 (Final report).
Carver, K.R., et al, Amherst, Univ. of Massachusetts, Oct. 1986, 82p. ADA-178 269/7/XAB.
Lang, R.
Remote sensing, Ice cover, Snow cover, Microwaves, Glaciers, Surface roughness, Scattering, Electromagnetic properties, Meetings, Soils.

42-1950
Physical and structural characteristics of Weddell Sea pack ice.
Gow, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Aug. 1987, CR 87-14, 70p., ADA-188 189, 31 refs.
Ackley, S.F., Buck, K.R., Golden, K.M.
Pack ice, Ice physics, Ice structure, Sea ice, Ice salinity, Drill core analysis, Frazil ice, Marine biology, Luminescence, Antarctica—Weddell Sea.
During Feb. and Mar. 1980 the physical properties of Weddell Sea pack ice were investigated via core drilling of 66 floes located along a transect of 600 nautical miles from 64 S to 74 S latitude at roughly 40 W longitude. These studies revealed widespread frazil ice in amounts not known to exist in arctic sea ice of comparable age and thickness. It is estimated from structure studies of 62 of the 66 floes that 54% of the total ice production in the Weddell Sea is generated as frazil. The disposition and exceptional thicknesses of the frazil show that mechanisms other than surface turbulence effects are involved and imply that the circulation and structure of water in the upper levels of the Weddell Sea are significantly different from those in the Arctic basin. Salinities of both first-year and multi-year floes are notably higher than those of their Arctic counterparts because summer surface melting is rare or absent in the Weddell Sea; in the Arctic, downward percolating meltwater flushes through the ice and lowers its salinity. Fluorescence was evaluated as a means of revealing biological activity in Weddell Sea pack ice. It proved useful as an index of combined living and dead material in the ice, but measurements failed to establish any consistent relationship between fluorescence and salinity as suggested by earlier work in the Weddell Sea. (Auth.)

42-1951
Spatial and temporal distribution of Northern Hemisphere snow cover.
Morse, B.J., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA technical report*, Oct. 1983, NESDIS 6, 32p., PB84-118 348, 7 refs.
Ropelewski, C.F.
Snow cover distribution, Remote sensing, Seasonal variations, Synoptic meteorology, Charts.

42-1952
Growth characteristics of hoarfrost with respect to avalanche occurrence.
Breyfogle, S.R., *Washington. State Department of Transportation. Report*, June 1986, WA-RD-90.1, 48p., PB87-133 641, For another version see 42-791.
Avalanche formation, Hoarfrost, Snow air interface, Ice crystal growth, Supercooled clouds, Snow surface, Snowfall, Surface roughness, Temperature effects, Snow water equivalent.

42-1953
Field observations of mine detection in snow using UHF short-pulse radar.
Arcone, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1987, SR 87-19, 24p., ADB-117 360, 11 refs.
Delaney, A.J.
Military operation, Radar echoes, Snow depth, Detection, Polar regions, Freeze thaw cycles, Experimentation, Metals.
The response to short-pulse radar of land mines emplaced in snow was observed throughout the winter of 1985-86 in Fairbanks, Alaska. The radar produced a pulse of a few nanoseconds duration with a spectrum centered near 900 MHz; resistively loaded dipole antennas were used at two polarizations. The mines—standard anti-armor types and a Plexiglas simulation of one of these—were emplaced at various orientations on or above a cleared ground surface and monitored. There was little change in the mine responses that occur before the ground surface response under conditions of 0 and 35 cm of snow, the maximum depth achieved, as long as the snow was dry. Responses from the migrating freeze-thaw interface in the active layer masked some of the later mine responses. The radar detected no response from several of the mines when the pack began to thaw and temperature was nearly constant at 0 C. Some polarization sensitivity was always evident, depending on the orientation of the mine. In no case was there any response to the Plexiglas simulation. UHF short-pulse radar is an excellent mine detection technique in dry snow so long as mines are metallic, but is unsuitable for detecting small, plastic mines in snow.

42-1954
Short history of scientific investigations on glaciers.
Clarke, G.K.C., *Journal of glaciology*, 1987, Special issue, p.4-24, Refs. p.18-24.
Glaciers, Research projects, History.

42-1955
Progress in glacial geology during the last fifty years.
Boulton, G.S., *Journal of glaciology*, 1987, Special issue, p.25-32, Refs. p.29-32.
Glacial geology, Glacial erosion, Glacial deposits, History.

42-1956
Fifty years of progress in understanding ice sheets.
Robin, G. de Q., et al, *Journal of glaciology*, 1987, Special issue, p.33-47, Refs. p.44-47.
Swithinbank, C.
Ice sheets, Measuring instruments, Climate, Ice mechanics, History.
Both the form and extent of the surface features of ice sheets have been defined more clearly by the relatively recent use of satellite studies (imagery and altimetry). In an analogous way, radio echo-sounding has enabled the accurate calculation of ice thicknesses and the mapping of the sub-ice bedrock contours, and hence estimation of the ice volume. Studies on the dynamics of ice sheets have been enhanced by bore-hole sampling of deep ice and the determination of ice-temperature distributions, coupled with measurements of mass balance and both surface and internal ice movement. Internal deformation of ice sheets, surging, and various flow theories are considered in relation to recent modelling studies. Global geophysics inevitably includes the role of ice sheets, and therefore climatological studies and new atmospheric chemistry data, together with information on the distribution of meteorites on the antarctic ice sheet, are considered critically. Modern concepts of the evolution of ice sheets have substantially modified earlier ideas of the glacial geologists and have explained much that had previously mystified them. (Auth.)

42-1957
Fifty years of progress in understanding sea ice.
Lewis, E.L., *Journal of glaciology*, 1987, Special issue, p.48-51, 46 refs.
Sea ice, History.

42-1958
Fifty years of progress in ice physics.
Glen, J.W., *Journal of glaciology*, 1987, Special issue, p.52-59, 46 refs.
Ice physics, Ice structure, History.

42-1959
History of snow-cover research.
Colbeck, S.C., *Journal of glaciology*, 1987, Special issue, MP 2316, p.60-65, 31 refs.
Snow cover, Snow hydrology, Avalanches, History.
The history of snow-cover research is divided into 4 distinct periods. Before 1900 there were systematic observations of snow but the tools were just being developed to begin serious research. From 1900 to 1936, many investigations were made because of the practical considerations of snow hydrology and snow avalanches. Individuals began the assessment of snow water equivalent for forecasting run-off and the observation of snow structure and texture. Quantitative and physical investigations quickened after government-sponsored laboratories were established in 1936, the same year as the founding of the International Glaciological Society. From 1936 through the 1960s, many detailed investigations were made into snow's physical properties and behavior. Professional societies organized national and regional meetings, and published the results of snow research. Many more laboratories became involved as knowledge about snow was developed and applied to run-off forecasting and avalanche defense. Snow research surged again during the 1970s with the establishment of a new generation of snow scientists using more advanced theory, computers, and instrumentation. As demands continue for solutions to snow problems with new emphasis on old themes, snow research generates knowledge about snow for a wide variety of applications.

42-1960
Technology in the advancement of glaciology.
Zwally, H.J., *Journal of glaciology*, 1987, Special issue, p.66-77, 97 refs.
Glaciology, Measuring instruments, Photography, Spacecraft, History.
Many of the major advances in glaciology during the past 50 years have followed the development and application of new technology for viewing and measuring various characteristics of ice. Microscopes to study ice crystals, radars to probe the internal structure of large ice masses, mass spectrometers to analyze the atomic composition of ice cores, and satellite sensors to measure the global distribution of ice are some of the tools readily adapted by glaciologists. Today, new tools include microcomputers for automatic data logging, large-memory computers for data processing and numerical modeling, sensitive instruments for ice analysis, and satellite sensors for large-scale ice observations. In the future, continued advances in key technologies will help guide the evolution of science questions considered by glaciologists, expanding the view of ice, its fundamental properties, its interactions within the ice-ocean-land-atmosphere system, and its role in the evolution of the global environment. Use of the changing technology in Antarctica is described in text and photos. (Auth.)

42-1961
Fifty years of progress in ice engineering.
Gold, L.W., *Journal of glaciology*, 1987, Special issue, p.78-85, 32 refs.
Ice loads, Ice (construction material), Icebreakers, Bearing strength, Frozen ground, History.

42-1962
Impact of the International Glaciological Society on the development of glaciology and its future role.
Weertman, J., *Journal of glaciology*, 1987, Special issue, p.86-90, 74 refs.
Organizations, Glaciology, Ice, History.

42-1963
Sliding friction and boundary lubrication of snow.
Glenne, B., *Transactions of the ASME. Journal of tribology*, Oct. 1987, 109(4), p.614-617, 34 refs.
Snow slides, Snow mechanics, Friction, Snow compaction.

42-1964
Effects of placer gold mining on primary production in subarctic streams of Alaska.
Van Nieuwenhuyse, E.E., et al, *Water resources bulletin*, Feb. 1986, 22(1), p.91-99, 41 refs.
LaPerriere, J.D.
Water pollution, Suspended sediments, Turbidity, Placer mining, Biomass.

42-1965
Submersible rig/mat unit drills first Arctic well.
Ocean industry, July 1987, 22(7), p.20-24, 3 refs.
Drills, Offshore structures.

42-1966
Preliminary climatology of trajectories related to atmospheric CO2 measurements at Alert and Mould Bay.
Higuchi, K., et al, *Atmospheric environment*, 1987, 21(9), p.1915-1926, 12 refs.
Trivett, N.B.A., Daggupaty, S.M.
Atmospheric circulation, Air masses, Air pollution, Carbon dioxide.

42-1967
Analysis of halogenated polycyclic aromatic hydrocarbons in urban air, snow and automobile exhaust.
Haglund, P., et al, *Chemosphere*, 1987, 16(10-12), p.2441-2450, 17 refs.
Alsberg, T., Bergman, A., Jansson, B.
Air pollution, Snow impurities, Hydrocarbons.

42-1968
Arctic haze and the radiation balance.
Valero, F.P.J., et al, *U.S. National Aeronautics and Space Administration, Moffett Field, CA. [Technical memorandum]*, Dec. 1985, NASA-TM-86784, 30p. N87-20146/3/XAB.
Ackerman, T.P.
Haze, Radiation balance, Ice optics, Aerosols, Air pollution, Solar radiation, Ice melting, Albedo, Polar regions.

42-1969
Seismic indications of shallow gas in the northern Barents Sea.
Solheim, A., et al, *Oslo. Norsk polarinstitutt. Rapportserie*, 1987, No.36, 34 + 30p., Refs. p.29-34. Bibliography 30p. (appendix).
Larsson, F.R.
Hydrates, Seismic surveys, Natural gas, Ocean bottom, Bottom sediment, Barents Sea.

42-1970
Shallow geology and geophysics of the Barents Sea with special reference to the existence and detection of submarine permafrost.
Elverhöi, A., et al, *Oslo. Norsk polarinstitutt. Rapportserie*, 1987, No.37, 71p. + appends., Refs. p.65-71.
Solheim, A.
Subsea permafrost, Sea ice distribution, Marine geology, Geophysical surveys, Ice conditions, Hydrography, Ice scoring, Icebergs, Quaternary deposits, Barents Sea.

42-1971
Outline of alternative solutions and the various applications of expanded polystyrene as a light fill material in Norway.
Frydenlund, T.E., *Norway. Veglaboratoriet. Meddelelse*, Aug. 1987, No.61, p.7-12.
Roads, Cellular plastics, Thermal insulation, Waterproofing, Frost protection, Construction materials, Compressive properties, Soil strength, Countermeasures, Soil freezing.

42-1972
EPS—materials specifications.
Myhre, O., *Norway. Veglaboratoriet. Meddelelse*, Aug. 1987, No.61, p.13-16.
Cellular plastics, Construction materials, Roads, Waterproofing, Chemical properties, Bearing strength.

42-1973
EPS—design considerations.
Refsdal, G., *Norway. Veglaboratoriet. Meddelelse,* Aug. 1987, No.61, p.17-20.
Road icing, Cellular plastics, Embankments, Construction materials, Pavements, Compressive properties.

42-1974
Thirteen years of experience with expanded polystyrene as a highweight fill material in road embankments.
Aabøe, R., *Norway. Veglaboratoriet. Meddelelse,* Aug. 1987, No.61, p.21-27.
Embankments, Frost protection, Construction materials, Roads, Bearing strength, Compressive properties, Deformation, Damage.

42-1975
Future trends for EPS use.
Refsdal, G., *Norway. Veglaboratoriet. Meddelelse,* Aug. 1987, No.61, p.29-32.
Roads, Cellular plastics, Frost protection, Construction materials, Embankments, Settlement (structural).

42-1976
Approach to an economical evaluation of winter road services. [Gedanken zu einer gesamtwirtschaftlichen Beurteilung des Winterdienstes],
Pichler, W., *Strassen- und Tiefbau,* Dec. 1987, 41(12), p.5-8, In German with English summary. 4 refs.
Cost analysis, Road icing, Road maintenance, Salting, Snow removal, Ice removal, Aggregates, Pollution.

42-1977
Equipment and carriers for snow-clearing roads, squares and streets. [Maschinen und Fahrzeuge zur Winterwartung von Wegen, Plätzen und Strassen],
Kotte, G., *Strassen- und Tiefbau,* Dec. 1987, 41(12), p.9-14, In German with English summary.
Snow removal, Equipment, Winter maintenance, Road maintenance, Design, Ice removal.

42-1978
Deterioration of concrete pavements due to frost. [Frostschäden an Betonfahrbahnen und Kappen],
Grunau, E.B., *Strassen- und Tiefbau,* Dec. 1987, 41(12), p.15-18, In German with English summary.
Pavements, Frost action, Concrete freezing, Chemical ice prevention, Damage, Salting, Porosity, Capillarity, Countermeasures.

42-1979
Influence of the composition of rolled asphalt on its behavior at cold temperature. [Einfluss der Zusammensetzung von Walzasphalt auf das Verhalten bei Kälte],
Arand, W., *Strasse und Autobahn,* Aug. 1987, 38(8), p.299-303, In German. 4 refs.
Bitumens, Cold weather construction, Composition, Temperature effects, Measuring instruments, Tests.

42-1980
Winter MIZEX 87: operation overview.
Horn, D.A., *Naval research reviews,* 1987, 29(3), p.15-21, 4 refs.
Ice water interface, Ice air interface, Ice edge, Oceanography, Remote sensing, Meteorology, Acoustics, Marine biology, Winter, Arctic Ocean.

42-1981
High-frequency structural relaxation in supercooled liquids.
Sridhar, S., et al, *Journal of chemical physics,* Jan. 15, 1988, 88(2), p.1170-1176, 24 refs.
Taborek, P.
Liquids, Supercooling, Structural analysis, Physical properties, Phase transformations, Experimentation, Temperature effects, Wave propagation.

42-1982
Density functional theory of freezing for molecular liquids.
Smithline, S.J., et al, *Journal of chemical physics,* Feb. 1, 1988, 88(3), p.2004-2014, 45 refs.
Rick, S.W., Haymet, A.D.J.
Liquids, Freezing, Mathematical models, Phase transformations, Molecular structure, Density (mass/volume).

42-1983
Mechanical properties and freezing and thawing resistance of high-strength concrete incorporating silica fume.
Malhotra, V.M., et al, *Cement, concrete, and aggregates,* Winter 1987, 9(2), p.65-79, 2 refs.
Painter, K.A., Bilodeau, A.
Concrete strength, Frost resistance, Concrete aggregates.

42-1984
Significance of interrupted testing on the freeze-thaw resistance of fly ash concrete by ASTM C 666(method A).
Langan, B.W., et al, *Cement, concrete, and aggregates,* Winter 1987, 9(2), p.113-116, 11 refs.
Ward, M.A.
Concrete strength, Frost resistance, Concrete aggregates.

42-1985
Changes in the under-ice characteristics of La Grande Rivière plume due to discharge variations.
Ingram, R.G., et al, *Atmosphere-ocean,* Sep. 1987, 25(3), p.242-250, With French summary. 18 refs.
Larouche, P.
River flow, Ice cover effect, Subglacial observations.

42-1986
Mechanism of ice growth in a batch crystallizer with an external cooler for freeze concentration.
Shirai, Y., et al, *Agricultural and biological chemistry,* Sep. 1987, 51(9), p.2359-2366, 10 refs.
Ice crystal growth, Freezing, Cooling systems.

42-1987
Snowball's chance.
Riley, F., *New scientist,* Jan. 14, 1988, 117(1595), p.45-48.
Regelation, Snow physics, Ice physics, Cohesion, Hydrogen bonds.

42-1988
Forecasting the stress-strain states of massive, hard, perennially frozen rocks for underground construction. [Prognoz napriazhenno-deformirovannogo sostoianiia massivov merzlykh porod pri stroitel'stve podzemnykh sooruzhenii],
Freiberg, E.A., et al, Problemy mekhaniki gornykh porod. Materialy vos'moĭ vsesoiuznoĭ konferentsii po mekhanike gornykh porod (Problems of rock mechanics. Proceedings of the Eighth All-Union Conference on rock mechanics) edited by D.M. Bronnikov and I.I. Zurabishvili, Moscow, Nauka, 1987, p.244-249, In Russian.
Gol'din, A.L., Prokopovich, V.S.
Frozen rock strength, Excavation, Underground facilities, Design, Stress strain diagrams.

42-1989
Antarctic marine research in winter: the Winter Weddell Sea Project 1986.
Hempel, G., *Polar record,* Jan. 1988, 24(148), p.43-48, 5 refs.
Sea ice, Ice mechanics, Marine biology, Antarctica—Weddell Sea.
Between June 27 and Dec. 1986 the West German research ship RV *Polarstern* completed Winter Weddell Sea Project, the first detailed winter survey of the pack ice, oceanology and biota of the offshore and eastern coastal Weddell Sea south to 76 deg S. This article briefly describes the ship and outlines the scientific program, which involved 137 scientists and technicians from 12 German and 16 non-German institutions. In the cruise of June 27-Sep. 17 research was centered on physical and chemical investigations of the structure and dynamics of water, ice and lower atmosphere, including growth and movement of the ice-field. The ship penetrated almost to the coast of Dronning Maud Land, failing, however, to find the Weddell Polynya which had appeared on satellite imagery in 1976-78. The cruise of Sep. 28-Dec. 14 added biological investigations to the program; crossing the main body of pack ice to investigate the eastern coastal polynya, the biology of sea ice, plankton, fish and bottom fauna, and the breeding and feeding of seals and penguins were investigated. Use was made of a field station established on the mainland ice cliff. Helicopters extended the range of the work on both cruises. (Auth.)

42-1990
Sea ice conditions during an early spring voyage in the eastern Weddell Sea, Antarctica.
Eicken, H., et al, *Polar record,* Jan. 1988, 24(148), p.49-54.
Grenfell, T.C., Stonehouse, B.
Sea ice, Wind direction, Marine biology.
During a late winter and early spring oceanographic voyage south into the Weddell Sea the icebreaker RV *Polarstern* first encountered patches and bands of loose floes at 58S; these increased over the next 150 km to form closed ice pack which extended 1000 km to the coast. Along the coast the ship encountered almost continuous shore leads and polynyas that formed repeatedly despite persistently low air and sea temperatures. These areas of open water form under the action of strong offshore winds that carry the main body of pack ice west and southwest. Polynyas and leads narrow and disappear temporarily only when winds with northerly or westerly components bring the pack ice toward the land, and reform as soon as offshore winds predominate. Open water, often more than 15 km wide, was present close to the ship throughout the spring voyage, facilitating oceanographic work as far south as 77S. *Polarstern's* full icebreaking capacity was needed only occasionally when winds temporarily pressed the pack ice against the coast. The presence throughout early spring of both fast and pack ice, separated by a zone of thin ice or open water, is essential to large populations of Weddell seals, emperor penguins and whales in the area. (Auth. mod.)

42-1991
Grazing research at northern latitudes.
Gudmundsson, O., ed, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, 374p., Refs. passim. For selected papers see 42-1992 through 42-1998.
NATO Advanced Research Workshop on Grazing Research at Northern Latitudes, Hvanneyri, Iceland, Aug. 5-10, 1985.
Ecosystems, Plant ecology, Grasses, Grazing, Polar regions, Tundra, Vegetation, Agriculture, Climatic factors.

42-1992
Arctic ecosystems: their structure, function and herbivore carrying capacity.
Bliss, L.C., Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.5-25, Refs. p.20-25.
Ecosystems, Tundra, Grasses, Vegetation, Polar regions, Nutrient cycle.

42-1993
Factors affecting production and stability of northern ecosystems.
Fridriksson, S., Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.27-35, 7 refs.
Ecosystems, Vegetation, Climatic factors, Solar radiation, Distribution, Polar regions, Iceland.

42-1994
Effect of grazing on stability and development of northern rangelands: a case study of Iceland.
Thorsteinsson, I., Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.37-43, 8 refs.
Vegetation, Grasses, Grazing, Climatic factors, Polar regions, Agriculture, Iceland.

42-1995
Plant response to defoliation: hierarchical considerations.
Archer, S.R., et al, Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.45-59, Refs. p.56-59.
Tieszen, L.L.
Vegetation, Plant physiology, Grazing, Growth, Polar regions, Plant ecology, Ecosystems.

42-1996
Grassland surveys in north Norway.
Nesheim, L., Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.63-68, 3 refs.
Grasses, Biomass, Vegetation, Grazing, Climatic factors, Agriculture, Norway.

42-1997
Grazing effects on species balance and herbage production in indigenous plant communities.
Grant, S.A., et al, Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.69-77, 16 refs.
Hodgson, J.
Plant ecology, Grazing, Seasonal variations, Polar regions.

42-1998
Riparian responses to various grazing systems and to periodic ice floes.
Buckhouse, J.C., Grazing research at northern latitudes. Edited by O. Gudmundsson, NATO ASI series. Series A, Life sciences, Vol.108, New York, Plenum Press, 1986, p.79-86, Refs. p.84-86.
Grasses, Grazing, Seepage, Ice erosion, Banks (waterways), Soil erosion, Streams.

42-1999
Local transformations to simulate crystal growth.
Good, W., Pattern recognition in practice II. Proceedings of the International Workshop, Amsterdam, June 19-21, 1985. Edited by E.S. Gelsema and L.N. Kanal, Amsterdam, Elsevier Science Publishers, 1986, p.47-56, 21 refs.
DLC Q327.P378 1986
Snow crystal growth, Snow crystal nuclei, Supersaturation, Temperature effects, Water vapor, Computer applications.

42-2000
Nonuniformity of deep structure of the earth crust beneath oceans. [Neodnorodnosti glubinnogo stroeniia zemnoĭ kory okeanov],
Kiselev, IU.G., et al, Leningrad, Sevmorgeologiia, 1986, 129p., In Russian. For selected paper see 42-2001. 5 refs.
Kraev, A.G.
Earth crust, Geophysical surveys, Drift stations, Polar regions, Arctic Ocean.

42-2001
Seismic surveys along the trajectory of the scientific drift station "North Pole-26" in 1983-1984. [Seismicheskie issledovaniia po trasse dreĭfa nauchnoĭ stantsii "SP-25" v 1983-1984 gg],
Ashikhmina, E.A., et al, Neodnorodnosti glubinnogo stroeniia zemnoĭ kory okeanov (Nonuniformity of deep structure of the earth crust beneath oceans) edited by IU.G. Kiselev and A.G. Kraev, Leningrad, 1986, p.68-74, In Russian. 5 refs.
Dik, G.G., Konovalov, V.V.
Drift stations, Seismic surveys, Earth crust, Arctic Ocean.

42-2002
Problems in hydrophysics. [Voprosy gidrofiziki],
Kaliuzhnyĭ, I.L., ed, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.308, 160p., In Russian. For selected papers see 42-2003 through 42-2007. Refs. passim.
Pavlova, K.K., ed.
Soil freezing, Soil temperature, Snow retention, Frost penetration, Moisture transfer, Snow water equivalent, River basins, Snow cover distribution, Heat transfer, Snow permeability, Snow density, Runoff, Forecasting.

42-2003
Theoretical basis for meltwater retention on agricultural fields. [Teoreticheskie osnovy zaderzhaniia talykh vod na sel'skokhoziaĭstvennykh poliakh],
Kaliuzhnyĭ, I.L., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.308, p.3-20, In Russian. 9 refs.
Lavrov, S.A., Pavlova, K.K.
Ground thawing, Meltwater, Snow water equivalent, Snow retention, Soil temperature, Heat transfer, Mass transfer.

42-2004
Mathematical modeling of freezing, thawing and water seepage processes in soils. [Matematicheskoe modelirovanie protsessov promerzaniia, ottaivaniia i infil'tratsii vlagi v pochve],
Zaretskiĭ, IU.A., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.308, p.20-39, In Russian. 23 refs.
Lavrov, S.A.
Soil freezing, Frost penetration, Soil water migration, Mathematical models, Seasonal freeze thaw, Ground ice, Ice content, Unfrozen water content.

42-2005
Determination of moisture transfer parameters in frozen soils. [K voprosu ob opredelenii parametrov vlagoperenosa merzlykh pochv],
Lavrov, S.A., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.308, p.46-54, In Russian. 12 refs.
Morozova, N.S., Pavlova, K.K.
Soil freezing, Frost penetration, Moisture transfer, Heat transfer, Soil temperature.

42-2006
Calculating snow density and water content during melting. [Raschet vlazhnosti i plotnosti snega v period snegotaianiia],
Petropavlovskaia, M.S., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.308, p.133-142, In Russian. 4 refs.
Snow cover distribution, Snow depth, Snow water equivalent, Snowmelt, Snow permeability, Snow density, River basins.

42-2007
Observations of snow water yield on water-impervious sites. [Rezul'taty nabliudeniĭ za vodootdacheĭ iz snega na vodonepronitsaemykh ploshchadkakh],
Shutov, V.A., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1986, Vol.308, p.142-151, In Russian. 9 refs.
Snow depth, Snow density, Snow water equivalent, Forecasting, Runoff, Air temperature.

42-2008
Arctic and its wildlife.
Sage, B., New York, Facts on File Publications, 1986, 190p., Refs. p.175-185.
Topographic features, Permafrost, Sea ice, Glaciers, Climate, Marine biology, Environments, Ecosystems, Vegetation, Animals, Polar regions.

42-2009
Developing synoptic analogs for extreme mass balance conditions on Queen Elizabeth Island ice caps.
Alt, B.T., *Journal of climate and applied meteorology*, Dec. 1987, 26(12), p.1605-1623, 55 refs.
Ice sheets, Mass balance, Synoptic meteorology, Canada—Northwest Territories—Queen Elizabeth Islands.

42-2010
Observations of the dynamics and kinematics of the atmospheric surface layer on the Ross Ice Shelf, Antarctica.
Slotten, H.R., et al, *Journal of climate and applied meteorology*, Dec. 1987, 26(12), p.1731-1743, 15 refs.
Stearns, C.R.
Weather stations, Remote sensing, Topographic effects, Antarctica—Ross Island.
Ross I. with its 3000 m volcanic peaks poses a prodigious barrier to the predominant southerly airflow of the western Ross Ice Shelf. This study investigates the relationship of Ross I. to the dynamics and kinematics of the atmosphere using surface data from an array of 6 automatic weather stations on the Ross Ice Shelf just south of Ross I. After the actual horizontal pressure gradients had been determined, dynamical relations were obtained which confirmed previous related research. The values of geostrophic departure angle found in this study are in good agreement with the findings of other researchers. Furthermore, a previously determined tendency of the geostrophic departure angle to increase with increasing wind speed over open ice has been confirmed in the region far to the south of the influence of Ross I. Near the south side of Ross I., however, this relation does not apply. It is postulated that the forcing of Ross I. on the dynamics of the lowest layers of the atmosphere is causing this difference to occur. Through an analysis of the individual terms in the equation of motion, further support was found for this hypothesis. On the assumption of a linear decrease of friction with height, the height for zero friction increases towards the south of Ross I. Finally, tentative evidence of higher pressure immediately to the south of the island has been found, which further supports the theory that the cold stable air advected northward by the predominant southerly flow is piling up on the south side of Ross I. (Auth.)

42-2011
Effect of Eurasian snow cover on global climate.
Barnett, T.P., et al, *Science*, Jan. 29, 1988, 239(4839), p.504-507, 33 refs.
Dümenil, L., Schlese, U., Roeckner, E.
Snow cover effect, Climate, Mathematical models, Atmospheric circulation.

42-2012
Prediction and correlation of freezing point depression of aqueous solutions.
Chen, C.S., et al, *American Society of Agricultural Engineers. Transactions*, July-Aug. 1987, 30(4), p.1176-1180, 20 refs.
Nagy, S.
Freezing points, Supercooling, Solutions.

42-2013
Rain-snow boundaries over southern Ontario.
Stewart, R.E., et al, *Monthly weather review*, Sep. 1987, 115(9), p.1894-1907, 26 refs.
King, P.
Precipitation (meteorology), Snowfall, Radar echoes.

42-2014
Use of enhanced IR/visible satellite imagery to determine heavy snow areas.
Beckman, S.K., *Monthly weather review*, Sep. 1987, 115(9), p.2060-2087, 37 refs.
Snowfall, Synoptic meteorology, Spaceborne photography, Infrared photography.

42-2015
Marine hydrological calculations and forecasts. [Morskie gidrologicheskie raschety i prognozy],
Abuziarov, Z.K., ed, *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.270, 88p., In Russian. For selected papers see 42-2016 through 42-2019. Refs. passim.
Sea ice distribution, Ice cover thickness, Ice cover strength, Ice forecasting, Ice reporting.

42-2016
Long-range forecasts of maximum ice thickness on southern seas of the USSR. [Dolgosrochnyĭ prognoz maksimal'noĭ tolshchiny l'da na iuzhnykh moriakh SSSR],
Kutsuruba, A.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.270, p.42-46, In Russian. 8 refs.
Sea ice distribution, Long range forecasting, Ice conditions, Ice cover thickness.

42-2017
Interrelations between sea-ice conditions and ice cover thickness in near-shore zones. [Vzaimosviaz' ledovitosti moria i tolshchiny l'da v pribrezhnoĭ zone moria],
Karakash, A.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.270, p.47-51, In Russian. 1 ref.
Sea ice distribution, Ice navigation, Fast ice, Ice cover thickness, Ice cover strength, Ice forecasting.

42-2018
Forecasting the breakup of fast ice. [K prognozu vzloma pripaia],
Skokov, R.M., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.270, p.52-57, In Russian. 13 refs.
Fast ice, Ice cover thickness, Ice cover strength, Ice forecasting, Ice breakup, Arctic Ocean.

42-2019
Heat balance of water in southern Kola Bay. [Teplovoĭ balans vod iuzhnoĭ chasti Kol'skogo zaliva],
Zaĭkov, S.V., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1985, Vol.270, p.57-63, In Russian. 6 refs.
Sea ice, Ice conditions, Ice melting, Water temperature, Solar radiation, Ocean currents, Heat transfer, Heat balance.

42-2020
Aerial gamma-survey of snow cover and soil moisture. [Aviatsionnaia gamma-s"emka snezhnogo pokrova i vlazhnosti pochvy],
Nikiforov, M.V., ed, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy*, 1986, Vol.17, 128p., In Russian. For selected papers see 42-2021 through 42-2031. Refs. passim.
Gamma irradiation, Remote sensing, Aerial surveys, Snow surveys, Soil surveys, Snow water equivalent, Water reserves, Measuring instruments, Mathematical models.

42-2021
Present state, application problems, and prospects for the development of airborne gamma-surveys of snow cover and soil moisture in the USSR. [Sovremennoe sostoianie, trudnosti (problemy) vnedreniia v SSSR i perspektivy razvitiia aviatsionnykh gamma-s"emok snezhnogo pokrova i vlazhnosti pochvy],
Nikiforov, M.V., *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy*, 1986, Vol.17, p.3-7, In Russian. 13 refs.
Aerial surveys, Gamma irradiation, Snow physics, Snow cover distribution, Soil water, Remote sensing, Measuring instruments.

42-2022
Experience of introducing airborne gamma-surveys of snow cover in eastern regions of the USSR. [Opyt vnedreniia aviatsionnykh gamma-s"emok snezhnogo pokrova v vostochnykh raionakh SSSR],
Stroganov, A.N., *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy*, 1986, Vol.17, p.7-25, In Russian. 6 refs.
River basins, Remote sensing, Gamma irradiation, Snow surveys, Snow cover distribution, Snow water equivalent, USSR—Yenisey River, USSR—Angara River.

42-2023
Introduction of gamma-surveying of snow cover in mountains and using the data obtained in forecasting mountain river runoff. [Problemy vnedreniia gamma-s"emok snezhnogo pokrova v gorakh i ispol'zovaniia ikh materialov v prognozakh stoka gornykh rek],
Getker, M.I., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy*, 1986, Vol.17, p.25-41, In Russian. 10 refs.
Shentsis, I.D.
River basins, Snow cover distribution, Aerial surveys, Gamma irradiation, Snow surveys, Snow water equivalent.

42-2024
Determining territorial non-radioactive pollution from airborne gamma-surveys of snow. [Ob ispol'zovanii rezul'tatov samoletnoĭ gamma-s'emki snezhnogo pokrova dlia opredeleniia zagriazneniia territoriĭ neradioaktivnymi produktami],
Vasilenko, V.N., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy*, 1986, Vol.17, p.41-48, In Russian. 9 refs.
Nazarov, I.M., Pegoev, A.N., Fridman, Sh.D.
Air pollution, Soil pollution, Water pollution, Snow composition, Snow surveys, Remote sensing, Aerial surveys.

42-2025
Using aerial gamma snow surveying data in forecasting spring water reserves in soils. [O primenenii rezul'tatov aviatsionnoĭ gamma-s"emki snezhnogo pokrova dlia prognoza zapasov vlagi v pochve na vesnu],
Polevoĭ, A.N., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.48-56, In Russian. 7 refs.
Virchenko, E.P.
Snow composition, Snow cover distribution, Snow water equivalent, Soil water, Water reserves, Aerial surveys, Gamma irradiation.

42-2026
Practical application of aerial gamma-survey soil moisture data in the Rostov Weather Bureau. [Ispol'zovanie dannykh aviatsionnoĭ gamma-s"emki vlazhnosti pochvy v operativnoĭ rabote Rostovskogo biuro pogody],
Svisiuk, I.V., *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.56-59, In Russian.
Aerial surveys, Gamma irradiation, Soil water, Water content, Mapping.

42-2027
Experience of the northern UGKS in utilizing gamma-survey data on snow cover. [Opyt Severnogo UGKS po ispol'zovaniiu rezul'tatov gamma-s"emki snezhnogo pokrova],
Chuvakina, Z.M., *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.59-66, In Russian. 3 refs.
Snow surveys, Aerial surveys, Route surveys, Gamma irradiation, Snow water equivalent.

42-2028
Possible metrological approaches to aerial gamma-surveys of snow cover and soil moisture. [Vozmozhnye priemy metrologicheskogo obespecheniia aviatsionnykh gamma-s"emok snezhnogo pokrova i vlazhnosti pochv],
Georgievskiĭ, V.F., *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.86-90, In Russian. 3 refs.
Remote sensing, Aerial surveys, Gamma irradiation, Soil water, Snow cover distribution, Snow water equivalent.

42-2029
Optimizing some parameters in modeling aerial gamma-surveys of snow cover and soil moisture. [Optimizatsiia nekotorykh parametrov modelirovaniia aerogamma-s"emok snezhnogo pokrova i vlazhnosti pochv],
Georgievskiĭ, V.F., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.90-99, In Russian. 3 refs.
Murashova, L.N., Nikiforov, M.V., Shurupova, A.I.
Gamma irradiation, Remote sensing, Aerial surveys, Soil water, Snow cover, Snow water equivalent, Mathematical models.

42-2030
Improved method of aerial gamma-measurements of soil water content. [Usovershenstvovanie sposoba samoletnoĭ gamma-vlagometrii pochvy],
Nikiforov, M.V., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.100-102, In Russian. 2 refs.
Pegoev, N.N., Shkuratov, I.I.
Soil water, Remote sensing, Aerial surveys, Gamma irradiation, Measuring instruments.

42-2031
Experimental determination of snow water reserves for the Zailiyskiy Alatau Mountains using a remote sensing system, which registers attenuation of the flow of cosmic ray neutrons. [Opyt opredeleniia vlagozapasov v snege v gorakh Zailiĭskogo Alatau s pomoshch'iu distantsionnoĭ sistemy registriruiushcheĭ oslablenie potokov neĭtronov kosmicheskikh luchei],
Avdiushin, S.I., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut sel'skokhoziaĭstvennoĭ meteorologii. Trudy,* 1986, Vol.17, p.106-114, In Russian. 2 refs.
Aerial surveys, Gamma irradiation, Snow water equivalent, Water reserves.

42-2032
Meteorological data of the Georg von Neumayer Station for 1983 and 1984.
Gube-Lenhardt, M., *Berichte zur Polarforschung,* 1987, No.38, 108p., 1 ref.
Ice temperature, Glacial meteorology, Antarctica—Georg von Neumayer Station.
This report describes the meteorological conditions at the Georg von Neumayer Station for the years 1983 and 1984. The data compiled, archived, and presented in this report are in close agreement with the previous issue on this subject (Gube-Lenhardt and Obleitner, 1986). Specific topics briefly reported are: instrumentation, air temperature, pressure, humidity, cloudiness, wind speed and direction, vertical temperature gradient, temperature inversions, global radiation, long wave radiation flux, albedo, radiation budget, upper air temperature, mixing ratio, winds, layer thicknesses, and tropopause height.

42-2033
Winter expedition of FS *Polarstern* to the Antarctic (ANT V/1-3). [Die Winter-Expedition mit FS *Polarstern* in die Antarktis (ANT V/1-3)],
Schnack-Schiel, S., ed, *Berichte zur Polarforschung,* 1987, No.39, 259p., In German and English with English and/or German summaries.
Expeditions, Heat flux, Marine biology, Oceanography, Sea ice, Remote sensing, Ocean currents, Ice air interface, Antarctica—Weddell Sea.
For the first time RV *Polarstern* spent the winter in the pack-ice zone of the Antarctic starting on May 6 and ending on Dec. 14, 1986. The cruise consisted of 3 legs (V/1, 2, 3) on which different multidisciplinary research programs were carried out. The first leg concentrated on 3 objectives in the Bransfield Strait region: studies on the distribution and composition of krill; fisheries research around Elephant I. to estimate biomass as well as to examine biomass as well as to examine food consumption and composition for antarctic fish; and biochemical studies on overwintering marine animals and growth experiments with krill. The second leg being the first part of the Winter Weddell Sea Project (WWSP'86) started on June 27, 1987. Studies on the interaction of sea ice on the oceanic and atmospheric circulation along a transect following the Greenwich Meridian through the pack-ice to the antarctic coast, formed a central part of the research program. Biological work concentrated on the investigation of sea ice biota. Emphasis during the third leg (Sep. 28-Dec. 14, 1986) was put on studies of biological processes in the ice covered Weddell Sea during winter and the beginning of spring bloom. Feeding and reproduction of Weddell seals and Emperor penguins in an ice covered bay were investigated from the newly constructed Drescher Station. The volume consists of detailed reports on activities during each leg, and descriptions of the scientific work, written by a number of the participants.

42-2034
Weather and synoptic situation during Winter Weddell Sea Project 1986 (ANT V/2) July 16-September 10, 1986.
Rabe, W., *Berichte zur Polarforschung,* 1987, No.40, 161p.
Ice navigation, Glacial meteorology.
The meteorological situation during the cruise of RV *Polarstern* into the deep antarctic ice pack in winter 1986 is described. Hand drawn analyses of surface pressure charts over the Atlantic sector of the southern ocean, radiosonde data and 3 hourly weather observations give an overview for each day from July 16 to Sep. 10. Typical periods in development and behavior of synoptic systems are discussed, and mean surface pressure charts and storm tracks are presented. (Auth.)

42-2035
Cryosphere—neglected component of the climate system.
Barry, R.G., Toward understanding climate change. The J.O. Fletcher lectures on problems and prospects of climate analysis and forecasting, edited by U. Radok, Boulder, Westview Press, 1987, p.35-67, Refs. p.62-67.
DLC QC981.8.C5T65
Ice sheets, Climatic changes, Snow cover distribution, Sea ice.
What is known about the extent and variability of the cryosphere, particularly looking at land snowcover and sea ice, is summarized. Recent modelling studies on ice/albedo climate feedback and its magnitude relative to other feedbacks are reviewed, and some of the observational evidence for such feedback processes on synoptic to monthly time scales is considered. The cloud problem, which is one of the complicating factors in studying high-latitude snow and ice, is discussed and some aspects of predictability are reviewed. (Auth. mod.)

42-2036
Macquarie Island—Mt. Wilhelm: periglacial features of a subantarctic island and comparison with a tropical mountain. [Macquarie Island—Mt. Wilhelm: Periglazialerscheinungen einer subantarktischen Insel und eines tropischen Hochgebirges im Vergleichy,
Löffler, E., *Zeitschrift für Geomorphologie,* Nov. 1986, Suppl. Vol.61, p.55-64, In German with English summary. 18 refs.
Permafrost, Solifluction, Periglacial processes, Macquarie Island.
The often claimed similarity of the periglacial solifluction features between the Subantarctic and the humid tropical mountains is examined using 2 examples—Macquarie I. and Mt. Wilhelm (New Guinea)—both areas being nearly isothermal in their climatic regimes. It is shown that despite some similarities in surficial solifluction features the differences are more striking. On Mt. Wilhelm the periglacial solifluction features are restricted to shallow screes and miniature patterned ground while Macquarie I. is dominated by thick solifluction debris which is differentiated into largely relict high terraces on lee-ward slopes and highly mobile solifluction screes on windward slopes. The differences in solifluction features can be explained by the different geomorphological development of the two areas during the Pleistocene caused by the different frost regime. On Macquarie I. a relatively small temperature depression changed the diurnal frost cycle to permafrost while on Mt. Wilhelm it did not alter the diurnal regime of frost and thaw. (Auth.)

42-2037
Antarctic climates.
Carleton, A.M., Encyclopedia of earth sciences, volume 11, The encyclopedia of climatology, edited by J.E. Oliver and R.W. Fairbridge, New York, Van Nostrand Reinhold, 1987, p.44-64, Refs. p.60-63.
DLC QC854.E525
Sea ice distribution, Albedo, Climate, Ice air interface, Polar regions.
The presence of ice as a climatic factor in polar regions opens this review, following with radiation climates and the energy balance, climatic variables, large scale atmospheric circulation, and synoptic processes. Numerous tables and illustrations, with data such as the physical environment of the Antarctic, distribution of global solar radiation, surface albedo, radiation balance, ice thickness distribution, surface temperature, cloud cover, wind speed, and geopotential height, are presented.

42-2038
Life on a deep freeze.
Atkinson, K., *Geographical magazine,* Sep. 1987, 59(9), p.444-449.
Permafrost beneath structures, Cold weather construction, Pile structures, Utilities, Canada—Northwest Territories—Inuvik.

42-2039
Determination of the contact area between ski and snow using a simple thermal conductivity meter.
Pihkala, P., et al, *Helsinki. University. Department of Geophysics. Report series in geophysics,* 1986, No.22, 12p., 11 refs.
Spring, E.
Metal snow friction, Snow thermal properties, Skis, Thermal conductivity, Snow surface, Measuring instruments.

42-2040
On the study of D.S.C. of the unexpected ice melting at 0 C of emulsified aqueous saline solutions.
Clausse, D., et al, *Thermochimica acta,* 1987, Vol.122, p.123-133, 12 refs.
Sifrini, I., Dumas, J.P.
Ice melting, Salt ice, Solutions, Crystals.

42-2041
Energy transfer from uranyl nitrate hexahydrate to rare-earth ions in frozen solutions.
Kandpal, H.C., et al, *Journal of luminescence,* 1987, Vol.39, p.45-48, 16 refs.
Joshi, K.C.
Solutions, Luminescence, Spectra.

42-2042
Glacio-tectonic structures: a mesoscale model of thin-skinned thrust sheets?.
Croot, D.G., *Journal of structural geology,* 1987, 9(7), p.797-808, 30 refs.
Moraines, Periglacial processes, Tectonics, Glacial geology, Iceland.

42-2043
Twenty-fifth Soviet Antarctic Expedition. Studies of the 1979/80 season. [Dvadtsat' piataia Sovetskaia antarkticheskaia ekspeditsiia. Sezonnye issledovaniia 1979/80 g.],
Sovetskaia antarkticheskaia ekspeditsiia, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1984, Vol.79, 127p., In Russian. Refs. passim. For individual papers see B-36999, B-37000, H-37004, and I-37001 through I-37003.
Kornilov, N.A., ed, Kozlovskiĭ, A.M., ed, Leont'ev, E.B., ed.
Expeditions, Ice navigation, Polar regions.
This volume contains information on observations and results of scientific efforts carried out by the 25th Soviet Antarctic Expedition in 1979-1980 season on the antarctic continent and surrounding waters. Seasonal activities and organization of the expedition, including logistic support and contact with non-Soviet expeditions, are outlined in the first part of the book. The second part consists of 6 individual papers giving the scientific results of projects in biology, meteorology, and studies on human adaptation to antarctic conditions.

42-2044
Static compression of H2O-ice to 128GPa (1.28 Mbar).
Hemley, R.J., et al, *Nature,* 24/31 Dec. 1987, 330(6150), p.737-740, 27 refs.
High pressure ice, Compressive properties, Ice structure, Hydrogen bonds.

42-2045
Sulphuric acid at grain boundaries in antarctic ice.
Mulvaney, R., et al, *Nature*, Jan. 21, 1988, 331(6153), p.247-249, 14 refs.
Wolff, E.W., Oates, K.
Ice composition, Chemical properties, X ray analysis, Antarctica—Antarctic Peninsula.
It has been suggested that acids in the cold polar ice sheets may exist as aqueous mixtures at grain boundaries. This assumption can correctly predict the d.c. conductivty pf polar ice, but this does not prove the existence of acids or liquid veins at grain boundaries, and this remains controversial. In this study a scanning electron microscope (SEM) was used, equipped with a cold stage and an energy-dispersive X-ray microanalysis facility, to determine the location of sulphur in ice from the Antarctic Peninsula. As expected, sulphur was undetectable in the bulk of the ice. However, at the junctions where three grains met (triple-junctions), sulphur was found in concentrations greater than 1 M in areas of <1 sq micrometer. Calculations show that between 40 and 100% of the sulphuric acid present in this ice was found at the triple-junctions, and would have been liquid at ice-sheet temperatures. This finding, if general, has considerable implications for many of the physical properties of polar ice. (Auth.)

42-2046
Ice navigation properties of ships. [Ledovye kachestva sudov]
Popov, IU.N., ed, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, 176p., In Russian. For individual papers see 42-2047 through 42-2068. Refs. passim.
Faddeev, O.V., ed.
Marine transportation, Ice navigation, Ships, Cargo, Icebreakers, Design, Mathematical models.

42-2047
Selection of basic elements of ice-navigation transport ships at the first design stage. [Osobennosti vybora osnovnykh elementov transportnykh sudov ledovogo plavaniia v nachal'noĭ stadii proektirovaniia]
Popov, IU.N., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.5-15, In Russian. 8 refs.
Ice navigation, Ships, Ice breaking, Marine transportation, Design.

42-2048
Influence of the mass of a ship on its speed of movement in ice fields. [O vliianii massy sudna na ego ledoprokhodimost' v sploshnykh l'dakh]
Popov, IU.N., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.16-21, In Russian. 5 refs.
Kashtelian, V.I.
Ice navigation, Ships, Icebreakers, Velocity.

42-2049
Estimating the effect of frame form and principal dimensions of an icebreaker on component redistribution in the general ice resistance balance. [Otsenka vliianiia formy korpusa i glavnykh razmerenii ledokola na pereraspredelenie sostavliaiushchikh v obshchem balanse ledovogo soprotivleniia]
Ionov, B.P., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.22-30, In Russian. 3 refs.
Icebreakers, Ice navigation, Ice breaking, Ice cover thickness, Stresses, Ice loads.

42-2050
Ice breaking air-cushion vessels moving at low speeds. [Razrushenie l'da s pomoshch'iu sudna na vozdushnoĭ podushke pri malykh skorostiakh khoda]
Amfilokhiev, L.B., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.31-36, In Russian. 1 ref.
Air cushion vehicles, Ice breaking, Ice navigation, Ships.

42-2051
Theoretical and experimental studies of propeller interactions with ice. [Teoreticheskie i eksperimental'nye issledovaniia vzaimodeĭstviia grebnogo vinta so l'dom]
Nikitin, M.N., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.37-42, In Russian.
Pozniak, I.I., [Akonovskiĭ, S.V.
Ships, Propellers, Ice navigation, Icebreakers.

42-2052
Accounting for the scale effect when modelling the ice breaking process by icebreakers. [K voprosu otsenki masshtabnogo effekta pri modelirovanii protsessa lomki l'da ledokolom]
Kashtelian, V.I., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.43-50, In Russian. 4 refs.
Ice breaking, Models, Icebreakers.

42-2053
Ramming methods of ice breaking in Antarctica. [O rabote sudov nabegami vo l'dakh Antarktiki]
Dubov, A.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.51-54, In Russian.
Irishin, V.S.
Icebreakers, Ice navigation, Ice breaking.
The use of cargo ships in antarctic ice and the advantages of the ramming technique of icebreaking are discussed. Testing has proved that the mean velocity of icebreaker movement increases when two icebreakers work simultaneously on parallel courses, using the ramming technique.

42-2054
Determining the arrangements for formulas describing the interaction between ice cover and structures. [Opredelenie struktury formuly dlia otsenki vzaimodeĭstviia ledianogo pokrova s konstruktsiiami]
Faddeev, O.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.55-62, In Russian. 8 refs.
Kheĭsin, D.E.
Ice navigation, Mathematical models, Ice pressure, Ice elasticity, Ice floes, Hydraulic structures, Ice loads, Bearing strength, Design.

42-2055
Using probability methods in processing the results of strain tests of ships in ice. [Obrabotka rezul'tatov tenzometricheskikh ispytaniĭ sudov vo l'dakh s pomoshch'iu veroiatnostnykh metodov]
Likhomanov, V.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.63-70, In Russian. 5 refs.
Ice navigation, Ships, Ice loads, Ice floes, Impact strength, Impact tests, Tensile properties, Mathematical models, Ice pressure.

42-2056
Stereomechanical model of ship's impact against an ice floe of finite dimensions. [Stereomekhanicheskaia model' udara sudna o l'dinu konechnykh razmerov]
Kheĭsin, D.E., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.71-78, In Russian. 4 refs.
Popov, IU.N., Kurdiumov, V.A.
Ice navigation, Ships, Dynamic loads, Ice floes, Impact strength, Ice loads.

42-2057
Accounting for the wear of the hull when preparing ice-navigation certificates for cargo vessels. [Uchet iznosa korpusnykh konstruktsiĭ pri razrabotke ledovykh pasportov transportnykh sudov]
Faddeev, O.V., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.79-83, In Russian. 2 refs.
Ice navigation, Ships, Abrasion, Corrosion, Analysis (mathematics).

42-2058
On the mass and strength indices of different types of double-sided ships. [K voprosu o prochnostnykh i massovykh pokazateliakh razlichnykh tipov dvoĭnogo borta]
Faddeev, O.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.84-95, In Russian. 3 refs.
Irishin, V.S.
Ice navigation, Environmental protection, Oil spills, Tanker ships, Design, Ocean environments.

42-2059
Analysis of experimental towing of cargo ships in the wake of icebreakers. [Analiz opyta provodki transportnykh sudov vo l'dakh v kormovom vyreze ledokola]
Likhomanov, V.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.97-100, In Russian.
Popov, IU.N.
Ice navigation, Icebreakers, Cargo, Ships, Arctic Ocean.

42-2060
Processing and evaluation of experimental modeling results obtained in an ice basin. [Obrabotka i otsenka rezul'tatov model'nogo eksperimenta v ledovom basseĭne]
Ionov, B.P., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.101-107, In Russian. 2 refs.
Ships, Ice navigation, Icebreakers, Mathematical models, Ice cover thickness.

42-2061
Estimating the homogeneity of model ice cover according to strength. [Otsenka odnorodnosti modelirovannogo ledianogo pokrova po prochnosti]
Ionov, B.P., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.108-111, In Russian. 2 refs.
Models, Ice cover strength, Elastic properties, Flexural strength, Temperature effects.

42-2062
Characteristics of temperature regime for preparation of model ice in the ice basin of the Arctic and Antarctic Scientific Research Institute. [Osobennosti temperaturnogo rezhima dlia prigotovleniia modelirovannogo l'da v ledovom basseĭne AANII]
Dedushkin, R.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.112-114, In Russian. 1 ref.
Artificial ice, Models, Ice strength, Water chemistry, Salinity.

42-2063
Testing the heating of the frame of a powerful icebreaker during its performance. [Naturnye ispytaniia obogreva korpusa moshchnogo ledokola pri ego rabote vo l'dakh]
Dubov, A.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.115-123, In Russian. 2 refs.
Popov, IU.N., Seliugin, N.G.
Heating, Icebreakers, Icing, Ice breaking, Ice accretion.

42-2064
Icing of ship's frame during navigation in fall-winter seasons. [Oblipanie korpusa sudna l'dom pri plavanii v osenne-zimniĭ period]
Voevodin, V.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.124-128, In Russian. 4 refs.
Ship icing, Ice adhesion, Ice navigation, Ice conditions, Air temperature, Water temperature, Wind factors.

42-2065
Distortion of stress-curve forms on the bars of ship's electric power installations when powerful thyristor converters are at work. [Iskazheniia formy krivoĭ napriazheniia na shinakh sudovoĭ elektroenergeticheskoĭ sistemy pri rabote moshchnykh tiristornykh preobrazovateleĭ]
Makashov, E.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.129-136, In Russian. 4 refs.
Fiias', I.P., [Agodkin, V.IA.
Icebreakers, Electric power, Propellers, Ice navigation.

42-2066
Ice cover resistance to fracturing and its destruction by icebreakers. [Treshchinostoĭkost' i razrushenie ledianogo pokrova ledokolami]
Gol'dshteĭn, R.V., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.137-157, In Russian. 25 refs.
Osipenko, N.M.
Icebreakers, Ice breaking, Ice cracks, Crack propagation, Sea ice distribution.

42-2067
Determination of resistance forces during mooring operations in ice. [Opredelenie sil soprotivleniia pri shvartovnykh operatsiiakh vo l'dakh]
Aliavdina, T.F., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.158-161, In Russian. 1 ref.
Ice navigation, Mathematical models, Sea ice distribution.

42-2068
Preventing the icing of ship's hull. [K voprosu o predotvrashchenii oblipaniia l'dom korpusov sudov]
Gavrilo, V.P., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1985, Vol.391, p.162-165, In Russian. 3 refs.
Nikitin, V.A., [Unak, A.B.
Ice navigation, Artificial ice, Ship icing, Water chemistry, Salinity, Ice prevention, Tests, Models.

42-2069
Snow and avalanches in the Swiss Alps, winter 1985-86. [Schnee und Lawinen in den Schweizer Alpen, Winter 1985/86],
Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung, Its Winterberichte, No.50, Davos, Switzerland, 1987, 207p., In German.
For selected papers see 42-2070 through 42-2075.
Avalanche formation, Snow accumulation, Snowfall, Snow depth, Accidents, Damage, Snow cover stability, Switzerland—Alps.

42-2070
Snow and avalanches in the Davos region. [Schnee und Lawinen in der Region Davos],
Föhn, P., et al, *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte,* 1987, No.50, p.30-45, In German.
Beck, E.
Avalanche formation, Snow depth, Snow accumulation, Avalanche deposits, Switzerland—Davos.

42-2071
Snow and avalanche conditions in the Swiss Alps. [Schnee- und Lawinenverhältnisse im schweizerischen Alpengebiet],
Meister, R., et al, *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte,* 1987, No.50, p.46-110, In German.
Gliott, S., Heinzer, B.
Avalanche formation, Snow surveys, Snowfall, Snow accumulation, Snow water equivalent, Snow depth, Seasonal variations, Switzerland—Alps.

42-2072
Accidents and damage due to avalanches in the Swiss Alps. [Durch Lawinen verursachte Unfälle und Schäden im Gebiet der Schweizer Alpen],
Etter, H.-J., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte,* 1987, No.50, p.111-165, In German.
Avalanche formation, Accidents, Damage, Statistical analysis, Seasonal variations, Switzerland—Alps.

42-2073
Avalanche accidents outside the Swiss Alps. [Lawinenunfälle ausserhalb der Schweizer Alpen],
Gliott, S., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte,* 1987, No.50, p.166-174, In German.
Avalanche formation, Accidents, Damage, Statistical analysis.

42-2074
Snow profiles in forests. [Schneeprofile im Wald],
Imbeck, H., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte,* 1987, No.50, p.177-183, 11 refs., In German.
Snow accumulation, Forest land, Snow depth, Profiles.

42-2075
Project Stillberg, snow and avalanches in experimental areas. [Projekt Stillberg, Schnee und Lawinen auf der Versuchsfläche],
Rychetnik, J., *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte,* 1987, No.50, p.184-194, 20 refs., In German.
Avalanches, Snow accumulation, Snow depth, Mountains, Snow loads, Countermeasures, Switzerland—Stillberg.

42-2076
Proceedings, Vol.4.
International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988, MP 2317, New York, American Society of Mechanical Engineers, 1988, 348p., Refs. passim. For individual papers see 42-2077 through 42-2119.
Sodhi, D.S., ed, Luk, C.H., ed, Sinha, N.K., ed.
Offshore structures, Ice loads, Ice mechanics, Ice physics, Engineering, Meetings, Sea ice, Ice conditions, Icebreakers.

42-2077
Three-dimensional ductile constitutive equation for ice.
Santaoja, K., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.1-9, 20 refs.
Ice crystal structure, Ice elasticity, Ice plasticity, Viscoelasticity, Ice deformation, Temperature effects, Analysis (mathematics), Shear stress, Strains.

42-2078
Structure and tensile behavior of first year sea ice and laboratory-grown saline ice.
Kuehn, G.A., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.11-17, 7 refs.
Lee, R.W., Nixon, W.A., Schulson, E.M.
Ice structure, Offshore structures, Ice loads, Ice mechanics, Sea ice, Tensile properties, Salt ice, Temperature effects, Experimentation, Ice strength.

42-2079
Effects of temperature and strain rate on uniaxial compressive strength of naturally formed fresh-water ice.
Shen, L., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.19-23, 6 refs.
Zhao, S., Lu, X., Shi, Y.
Ice strength, Ice crystal structure, Stress strain diagrams, Compressive properties, Temperature effects, Impact strength, Ice cracks.

42-2080
New concept of compact compression test specimen to study the K(I) and K(IC) for Bohai Sea ice.
Wu, S., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.25-29, 10 refs.
Li, H., Zhang, X., Ji, X.
Ice strength, Ice physics, Compressive properties, Ice cracks, Stresses, Ice density, Fracturing, Sea ice.

42-2081
Experimental results on the buckling of freshwater ice sheets.
Timco, G.W., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.31-38, 18 refs.
Sinha, N.K.
Ice loads, Offshore structures, Ice cracks, Ice deformation, Tests, Microstructure, Ice pressure.

42-2082
Flexure and fracture of macrocrystalline S1 type freshwater ice.
Dempsey, J.P., et al, MP 2318, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.39-46, 31 refs.
Nigam, D., Cole, D.M.
Ice strength, Flexural strength, Fracturing, Ice crystal structure, Ice loads, Grain size, Ice cracks.
The four-point-bend loading configuration is used here to study the flexural strength and fracture toughness of macrocrystalline S1 type freshwater ice. The emphasis in this investigation was to minimize testing errors, prepare geometrically similar specimens milled to good accuracy, and to use a mechanical and repeatable method of notch formation. The question under study is: Would a wide scatter in flexural strengths and fracture toughness results still occur in S1 ice if the inaccuracies in specimen preparation and variations in notch acuity were minimized, and if the specimen size were increased significantly? The basic tenet then is that any scatter would be predominantly due to crystal orientation effects, grain size effects, variations in the predominant c-axis orientations, as well as both specimen size and specimen geometry.

42-2083
Growth of EG/AD/S model ice in a small tank.
Borland, S.L., MP 2319, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.47-53, 9 refs.
Ice models, Ice strength, Flexural strength, Ice elasticity, Solutions, Freezing, Ice mechanics, Tests, Ice growth, Ice sheets, Tanks (containers).
A new type of refrigerated model ice was tested for flexural strength and elasticity in a small basin. This model ice, termed "EG/AD/S" ice by the developer, Timco of NRCC, is produced by freezing a solution of three chemicals—ethylene glycol, aliphatic detergent, and sucrose. A small-scale laboratory investigation was conducted to determine some of the mechanical properties of the EG/AD/S ice and to make modifications to the chemical formula as needed. The results of these tests were found to compare well with Timco's results for EG/AD/S ice as well as with tests on urea ice grown in the same tank. Described are some of the problems with this new ice, including excessive sudsing and bacterial blooms, and the techniques used to try to alleviate them. Also discussed are several unique aspects of dealing with ice sheet growth and mechanical properties testing in a small tank.

42-2084
Experiments on anisotropic and rate sensitive strain ratio and modulus of columnar-grained ice.
Sinha, N.K., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.55-62, 14 refs.
Ice strength, Ice cracks, Ice crystal structure, Anistropy, Tests, Temperature effects, Stress strain diagrams, Loads (forces), Ice deformation.

42-2085
Simple beam tests on type S3 sea ice.
Borek, M., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.63-68, 8 refs.
Parsons, B., Hill, B.
Ice strength, Loads (forces), Flexural strength, Ice salinity, Temperature effect, Tests, Stresses.

42-2086
Norton Sound and northeastern Bering Sea ice behavior: 1981-1982.
Pritchard, R.S., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.69-74, 22 refs.
Sea ice distribution, Drift, Ice models, Ice mechanics, Wind factors, Ocean currents, Tidal currents, Velocity.

42-2087
Statistics of sea ice motion, Fram Strait to North Pole.
Moritz, R.E., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.75-82, 15 refs.
Colony, R.
Ice mechanics, Drift, Sea ice distribution, Ice loads, Velocity, Statistical analysis, Wind factors, Ocean currents, Stresses.

42-2088
Mesoscale air-ice-ocean feedback mechanism for the ice drift in the marginal ice zone.
Chu, P.C., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.83-90, 20 refs.
Drift, Ice mechanics, Ice edge, Ice water interface, Ice air interface, Air water interactions, Wind factors, Ocean currents, Temperature gradients, Ice conditions.

42-2089
Inferring ice/ocean surface roughness from horizontal current measurements.
McPhee, M.G., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.91-98, 13 refs.
Ice mechanics, Drift, Sea ice, Ice water interface, Stresses, Boundary layer, Surface roughness, Ice bottom surface, Turbulence.

42-2090
MIZEX '87 overview of the winter marginal ice zone experiment in the Greenland and Barents seas.
Johannessen, O.M., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.99-109, 12 refs.
Ice edge, Ice water interface, Ice air interface, Acoustics, Air water interactions, Remote sensing, Ocean waves, Sea ice distribution, Boundary layer, Wind factors, Greenland Sea, Barents Sea.

42-2091
Crushing and clearing of ice in fast spherical indentation tests.
Jordaan, I.J., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.111-116, 10 refs.
Maes, M.A., Nadreau, J.P.
Ice cutting, Ice solid interface, Fracturing, Loads (forces), Ice cracks, Ice mechanics, Tests, Ice deformation, Brittleness.

42-2092
Triaxial testing of freshwater ice at low confining pressures.
Nadreau, J.P., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.117-124, 20 refs.
Mawwar, A.M., Wang, Y.S.
Icebergs, Ice mechanics, Ice pressure, Ocean waves, Compressive properties, Tensile properties, Impact strength, Strains, Temperature effects, Tests.

42-2093
Influence of shape on iceberg wave-induced velocity statistics.
Lever, J.H., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.125-132, 11 refs.
Sen, D., Attwood, D.
Icebergs, Drift, Ocean waves, Ice mechanics, Offshore structures, Models, Tests, Statistical analysis, Velocity.

42-2094
Ice forces: current practices.
Croasdale, K.R., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.133-151, Refs. p.149-151.
Ice loads, Offshore structures, Loads (forces), Design criteria, Ice strength, Surface properties, Ice cover thickness.

42-2095
Ice pressure measurements using PVDF film.
Joensuu, A., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.153-158, 12 refs.
Ice pressure, Offshore structures, Impact strength, Dynamic properties, Experimentation, Measuring instruments, Tests.

42-2096
Design ice forces on offshore installations.
Tunik, A.L., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.159-163, 25 refs.
Ice loads, Offshore structures, Ice strength, Ice thermal properties, Ice pressure, Loads (forces), Seasonal variations, Brittleness, Design.

42-2097
Adfreeze strength of fresh and sea ice bonded to steel piles.
Nelson, W.G., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.165-169, 15 refs.
Phukan, A.
Ice adhesion, Piles, Steel structures, Ice strength, Ice solid interface, Ice salinity, Tests, Loads (forces), Temperature effects.

42-2098
Ice force oscillator model and its numerical solutions.
Xu, J., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.171-176, 6 refs.
Wang, L.
Ice loads, Offshore structures, Oscillations, Ice solid interface, Dynamic properties, Mathematical models, Vibration, Time factor, Ice cracks.

42-2099
Design, construction and verification of the Angasak spray ice exploration island.
Weaver, J.S., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.177-183, 9 refs.
Gregor, L.C.
Ice islands, Sea spray, Cold weather construction, Loads (forces), Ice (construction material), Design criteria, Exploration, Beaufort Sea.

42-2100
Reinforced ice domes as temporary enclosures for cold regions.
Glockner, P.G., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.185-192, 12 refs.
Ice (construction material), Ice strength, Shear strength, Cold storage, Loads (forces), Tests.

42-2101
Reinforced ice: mechanical properties and cost analysis for its use in platforms and roads.
Kuehn, G.A., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.193-200, 22 refs.
Nixon, W.A.
Ice mechanics, Cold weather construction, Roads, Ice (construction material), Loads (forces), Bearing strength, Cost analysis, Tests.

42-2102
Dynamic response of "Molikpaq" to ice-structure interaction.
Jefferies, M.G., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.201-220, 26 refs.
Wright, W.H.
Ice mechanics, Ice solid interface, Offshore structures, Ice loads, Dynamic properties, Ice deformation, Cracking (fracturing).

42-2103
Theoretical assessment of light structural damage due to ship collision with ice.
Moshaiov, A., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.221-227, 7 refs.
Steinhilber, M.R.
Ships, Ice loads, Ice solid interface, Ice strength, Offshore structures, Damage, Design, Plastic properties, Mathematical models.

42-2104
Local impact pressures due to first year ice in the marginal ice zone.
Zahn, P.B., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.229-238, 12 refs.
Minnick, P.V.
Ice pressure, Offshore structures, Ice loads, Ice edge, Ships, Ice conditions, Design, Impact strength.

42-2105
Model tests of downward breaking conical structures in ice.
Lau, M., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.239-247, 23 refs.
Muggeridge, D.B., Williams, F.M.
Ice loads, Offshore structures, Ice models, Tests, Surface properties, Wind factors, Ocean currents, Loads (forces), Damage, Ice conditions.

42-2106
About some parameters influencing on ice tolerance of coating film for arctic use.
Arita, M., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.249-253, 5 refs.
Takashima, H., Maeda, T., Tamura, K.
Offshore structures, Protective coatings, Ships, Metal ice friction, Strength, Tests, Damage.

42-2107
Friction panel measurements in full-scale and model-scale icebreaking ship tests.
Liukkonen, S., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.255-262, 8 refs.
Icebreakers, Metal ice friction, Ice pressure, Ice strength, Models, Tests, Velocity.

42-2108
Estimate of ice breaking capacity by a moving load.
Kozin, V.M., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.263-266, 7 refs.
Ice breaking, Ice navigation, Loads (forces), Gravity, Analysis (mathematics).

42-2109
Detailed study on relict iceberg scouring off mid-Norway.
Lien, R., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.267-274, 11 refs.
Christophersen, H.P.
Ice scoring, Icebergs, Ocean bottom, Soil strength, Hydraulic structures, Pipelines, Engineering, Norway.

42-2110
Heat transfer performance of commercial thermosyphons with inclined evaporator sections.
Haynes, F.D., et al, MP 2320, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.275-280, 14 refs.
Zarling, J.P.
Permafrost beneath structures, Heat transfer, Subgrades, Wind tunnels, Measuring instruments, Wind velocity, Tests, Evaporation, Equipment, Thermosyphons.
Laboratory tests have been conducted with two full-size, two-phase commercial thermosyphons in an atmospheric wind tunnel at the U.S. Army CRREL. The test variables were wind speed and evaporator inclination angle. The air speed ranged from 0 to 5.2 m/s. The evaporator angles were varied from 0 to 12 deg measured from the horizontal. The effect of nearby walls on thermosyphon performance was also investigated. Tests were conducted with walls oriented parallel, at 45 deg and at right angles to the air flow direction. The air temperature for all tests was about -18 C. Test results are presented with thermal conductance of the thermosyphon as a function of wind speed and evaporator inclination angle. The heat transfer conductance was found to increase with increasing wind speed and increasing evaporator inclination angle.

42-2111
On the application of thermosyphons in cold regions.
Zarling, J.P., et al, MP 2321, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.281-286, 14 refs.
Haynes, F.D., Daly, S.F.
Low temperature tests, Heat transfer, Wind velocity, Temperature effects, Equipment, Water flow, Ice growth, Measuring instruments, Thermosyphons.
The exposure of portable electronic data logging equipment to extreme low temperatures usually leads to system failure. To overcome this difficulty at northern remote sites, the use of a thermosyphon to transfer energy stored in the ground to an insulated instrument shelter was tested. The results of the test showed that the thermosyphon maintained the instrument shelter well above the outdoor ambient air temperature during cold spells. Laboratory tests were conducted with two-phase full-size thermosyphons to freeze water in a test basin. The test variables were wind speed and water velocity. A single-phase thermosyphon was also tested for growing ice. The heat transfer conductances of the thermosyphons were estimated for various wind speeds. The use of thermosyphons placed in rivers has been proposed to collect transported frazil ice to augment ice dam formation or prevent frazil ice from interacting with downstream hydraulic structures. Laboratory tests were conducted with model two-phase thermosyphons in a refrigerated flume to test this concept. Frazil ice was generated upstream of a thermosyphon array placed across the flume perpendicular to the flow. The ability to collect frazil was determined by measuring the head loss across the array with time. Comparisons were made with an array of solid aluminum rods with the same dimension as the model thermosyphons. The influence of wind was also investigated.

42-2112
Performance analysis of a reciprocating, polar Carnot cycle engine.
Lock, G.S.H., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.287-295, 13 refs.
Stanford, H.K., Jr.
Engines, Thermodynamics, Models, Polar regions, Temperature effects, Analysis (mathematics).

42-2113
Maximum density effects on vortex instability of horizontal and inclined buoyancy-induced flows in porous media.
Jang, J., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.297-305, 8 refs.
Chang, W.
Porous materials, Water flow, Heat transfer, Buoyancy, Boundary layer, Sands, Density (mass/volume), Temperature effects, Flow rate, Analysis (mathematics).

42-2114
Three-dimensional plasticity and momentum model for ship resistance in level ice.
Luk, C.H., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.307-315, 15 refs.
Ice strength, Ice loads, Ships, Plasticity, Ice mechanics, Velocity, Ice breaking, Icebreakers, Mathematical models.

42-2115
Finite-simulation error bounds for estimated k-year forces.
Wang, A.T., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.317-322, 8 refs.
Ice loads, Offshore structures, Computerized simulation, Design, Time factor.

42-2116
Creep settlement of artificial ice islands.
Man, C.S., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.323-330, 27 refs.
Ice islands, Artificial islands, Ice creep, Settlement (structural), Bearing strength, Stresses, Mathematical models.

42-2117
Deformation and fracture of arctic sea ice during kinetic energy penetration.
Swearengen, J.C., International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.331-336, 14 refs.
Ice strength, Ice deformation, Ice cracks, Ice mechanics, Sea ice, Fracturing, Dynamic properties, Penetration, Experimentation.

42-2118
Design of hull structures for ice-navigating ships.
Shemendiuk, G.P., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.337-341.
Babtsev, V.A., Bratukhin, O.I.
Ice navigation, Ships, Icebreakers, Ice loads, Damage, Design, Cracks.

42-2119
On replacement of floating bulwarks for ones attached to sheer strake: (or how long for a misconception to exist?).
Barabanov, N.V., et al, International Conference on Offshore Mechanics and Arctic Engineering, 7th, Houston, TX, Feb. 7-12, 1988. Proceedings, Vol.4. Edited by D.S. Sodhi, C.H. Luk and N.K. Sinha, New York, American Society of Mechanical Engineers, 1988, p.343-348, 5 refs.
Bratukhin, O.I.
Ships, Ice navigation, Strength, Construction.

42-2120
Ice floe collisions and their relations to ice deformation in the Bering Sea during February 1983.
Martin, S., et al, *Journal of geophysical research,* Feb. 15, 1988, 93(C2), p.1303-1315, 10 refs.
Becker, P.
Sea ice, Ice deformation, Ice floes, Drift, Bering Sea.

42-2121
Winter currents and hydrographic conditions on the northern central Bering Sea shelf.
Muench, R.D., et al, *Journal of geophysical research,* Jan. 15, 1988, 93(C1), p.516-526, 21 refs.
Schumacher, J.D., Salo, S.A.
Ocean currents, Sea ice, Hydrography, Bering Sea.

42-2122
On the ice and heat balance in Fram Strait.
Untersteiner, N., *Journal of geophysical research,* Jan. 15, 1988, 93(C1), p.527-531, 30 refs.
Sea ice, Ocean currents, Heat balance, Fram Strait.

42-2123
Relationship between heat transfer to sea ice and temperature-salinity properties of Arctic Ocean waters.
Moore, R.M., et al, *Journal of geophysical research,* Jan. 15, 1988, 93(C1), p.565-571, 12 refs.
Wallace, D.W.R.
Sea ice, Sea water, Salinity, Water temperature, Heat transfer.

42-2124
Study of climatic change and its implications for northern pipelines: Phase 1.
Burn, C., et al, *Carleton University, Ottawa, Ontario. Geotechnical Science Laboratories. Interim report,* July 1982, IR 28, 86p., Refs. p.84-86.
Rydén, B.E., Smith, M.W., Williams, P.J.
Permafrost thermal properties, Climatic changes, Thermal regime, Frozen ground temperature, Models, Forecasting, Design, Snowfall, Paleoclimatology.

42-2125
Investigation of temperature-induced stresses and water movements in frozen soils.
Torrance, J.K., et al, *Carleton University, Ottawa, Ontario. Geotechnical Science Laboratories. Interim report,* Sep. 1983, IR 34, 78p., 4 refs.
Wood, J.A.
Frozen ground mechanics, Frost heave, Soil water migration, Temperature gradients, Stresses, Experimentation, Ice lenses, Temperature variations.

42-2126
Study of climatic change and its implications for permafrost: Phase 2.
Smith, M.W., et al, *Carleton University, Ottawa, Ontario. Geotechnical Science Laboratories. Interim report,* 1983, IR 35, 103p., Refs. p.100-103.
Burn, C.R., Riseborough, D.W.
Permafrost thermal properties, Climatic changes, Thermokarst development, Ground ice, Soil temperature, Temperature variations.

42-2127
Analyses of stresses developed in pipelines buried in freezing ground.
Carleton University. Geotechnical Science Laboratories, Ottawa, Its Interim report, IR 36, Ottawa, Feb. 1984, 59p., 6 refs.
Soil freezing, Underground pipelines, Frost heave, Stresses, Ground thawing, Thermal regime, Deformation, Soil creep, Air temperature, Soil temperature, Rheology.

42-2128
Investigation of soil freezing in association with a buried chilled pipeline in a large-scale test facility: Phase 3. [Expérimentation sur le gel d'un sol et d'une canalisation enterrée et refroidie dans une installation d'essai de grandes dimensions, 3-e phase].
Carleton University. Geotechnical Science Laboratories, Ottawa, Its Interim report, IR 40, Ottawa, Sep. 1984, 68p., In French. 7 refs.
Soil freezing, Underground pipelines, Frost heave, Thermal regime, Soil water, Deformation, Stresses, Experimentation.

42-2129
Analyses of stresses developed in pipelines buried in freezing ground.
Carleton University. Geotechnical Science Laboratories, Ottawa, Ottawa, May 1985, 39p., 20 refs.
Soil freezing, Underground pipelines, Frost heave, Frost resistance, Thermal regime, Stresses, Freeze thaw cycles, Frozen ground mechanics, Models, Experimentation.

42-2130
Ice conditions at Cape Hatt, Baffin Island.
Dickins, D.F., *Arctic,* 1987, 40(Suppl. 1), p.34-41, With French summary. 8 refs.
Ice conditions, Fast ice, Oil spills, Ice breakup, Freezeup, Sea ice distribution, Aerial surveys, Canada—Northwest Territories—Baffin Island.

42-2131
Effects of oil and chemically treated oil on nearshore under-ice meiofauna studied *in situ*.
Cross, W.E., et al, *Arctic,* 1987, 40 (Suppl. 1), p.258-265, With French summary. 24 refs.
Martin, C.M.
Oil spills, Ice bottom surface, Marine biology, Fast ice, Chemical properties, Countermeasures, Canada—Northwest Territories—Baffin Island.

42-2132
Effects of oil and chemically treated oil on primary productivity of High Arctic ice algae studied *in situ*.
Cross, W.E., *Arctic,* 1987, 40 (Suppl. 1), p.266-276, With French summary. 66 refs.
Algae, Ice bottom surface, Oil spills, Biomass, Chemical properties, Countermeasures, Chlorophylls, Canada—Northwest Territories—Baffin Island.

42-2133
Low-temperature DSC investigation of hardened cement paste subjected to chloride action.
Beddoe, R.E., et al, *Cement and concrete research,* Mar. 1988, 18(2), p.249-256, 9 refs.
Setzer, M.J.
Cements, Concrete hardening, Freezing, Salting, Low temperature tests, Temperature measurement, Ions, Solutions, Phase transformations.

42-2134
Study of ice-formation phenomena on freezing of flowing water in a pipe.
Hirata, T., et al, *Journal of heat transfer,* Nov. 1987, 109(4), p.965-970, 11 refs.
Matsuzawa, H.
Ice formation, Water pipelines, Water flow, Heat transfer, Ice water interface, Turbulent flow, Temperature effects, Flow rate.

42-2135
Analytical study of the effect of the Darcy and Fick Laws on the sublimation of a frozen semi-infinite porous medium.
Fey, Y.C., et al, *Journal of heat transfer,* Nov. 1987, 109(4), p.1045-1048, 8 refs.
Boles, M.A.
Freezing, Porous materials, Heat transfer, Sublimation, Freeze drying, Analysis (mathematics).

42-2136
Surficial geology, permafrost, and physical processes.
Brewer, M.C., *U.S. Geological Survey. Bulletin,* 1987, No.1778, Petroleum geology of the northern part of the Arctic National Wildlife Refuge, northeastern Alaska. Edited by K.J. Bird and L.B. Magoon, p.27-36.
Permafrost distribution, Permafrost physics, Water reserves, Erosion, Geology, Seismology, Climatic factors, Soils.

42-2137
Unsteady plane flow of ice-sheets: a parabolic problem with two moving boundaries.
Hindmarsh, R.C.A., et al, *Geophysical and astrophysical fluid dynamics,* 1987, 39(3), p.183-225, 31 refs. 3 appends.
Morland, L.W., Boulton, G.S., Hutter, K.
Paleoclimatology, Polar regions, Ice models, Ice sheets, Ice creep, Rheology.
Finite difference algorithms have been developed to solve a one-dimensional non-linear parabolic equation with one or two moving boundaries and to analyze the unsteady plane flow of ice-sheets. They are designed to investigate the response of an ice-sheet to changes in climate, and to reconstruct climatic changes implied by past ice-sheet variations inferred from glacial geological data. Two algorithms are presented and compared. Both agree with the limited solutions available, and agree between themselves on the test runs carried out for the case where no analytic solutions are available. (Auth. mod.)

42-2138
Influence of ice cover on the magnitude of apparent additional masses of elements of semi-submerged platforms. [Vliianie ledianogo pokrova na velichinu prisoedinennykh mass elementov polupogruzhennykh platform],
Bol'shev, A.S., et al, *Leningrad. Politekhnicheskii institut. Sbornik nauchnykh trudov,* 1986, No.415, p.44-48, In Russian. 3 refs.
Matskevich, D.G., Shkhinek, K.N.
Offshore structures, Offshore drilling, Sea ice distribution, Ice floes.

42-2139
Geocryologic regionalization of the West Siberian platform. [Geokriologicheskoe raionirovanie Zapadno-Sibirskoĭ plity],
Trofimov, V.T., et al, Moscow, Nauka, 1987, 221p., In Russian with abridged English table of contents enclosed. Refs. p.217-220.
Geocryology, Mapping, Maps, Permafrost distribution, Active layer, Soil temperature, Cryogenic soils, Ground ice, Permafrost structure, Permafrost thermal properties.

42-2140
Reconstruction of hydrological and ice conditions and recent climatic variations in northern seas. [Rekonstruktsiia ledovo-gidrologicheskikh usloviĭ i sovremennye kolebaniia klimata severnykh morei],
Dement'ev, A.A., et al, Kompleksnye okeanologicheskie issledovaniia Barentseva i Belogo morei (Combined oceanologic investigations of the Barents and White seas) edited by V.S. Petrov, Apatity, 1987, p.14-20, In Russian. 6 refs.
Zubakin, G.K.
Sea ice, Ice conditions, Climatic changes, Polar regions.

42-2141
Basic results of calculations of oil spill movements and transformations in arctic seas. [Osnovnye rezul'taty raschetov peremeshcheniia i transformatsii neftianogo zagriazneniia v arkticheskikh moriakh],
Potanin, V.A., et al, Kompleksnye okeanologicheskie issledovaniia Barentseva i Belogo morei (Combined oceanologic investigations of the Barents and White seas) edited by V.S. Petrov, Apatity, 1987, p.95-97, In Russian. 2 refs.
Shcherbakov, O.N.
Ocean environments, Mathematical models, Petroleum transportation, Oil spills, Countermeasures, Arctic Ocean.

42-2142
1973-1980 winter test report(s).
U.S. National Safety Council. Committee on Winter Driving Hazards. Traffic Division, Stevens Point, WI, 1973-1980, 8 pieces, For 1969-1971 reports see 42-2245.
Winter maintenance, Tires, Road icing, Traction, Brakes (motion arresters), Safety, Equipment, Snow cover effect, Ice cover effect.

42-2143
Mechanism for the formation of the Weddell polynya in 1974.
Motoi, T., et al, *Journal of physical oceanography,* Dec. 1987, 17(12), p.2241-2247, 18 refs.
Ono, N., Wakatsuchi, M.
Sea ice, Polynyas, Salinity, Heat transfer.
The formation of the Weddell Polynya is investigated with a one-dimensional, convective mixed-layer model, using *in situ* data from late summer 1974 as initial conditions. It is proposed that a high-salinity mixed layer in summer resulted in the formation of the Weddell Polynya in 1974. The model results show that the high salinity allows deep convection driven by surface cooling alone, and the resulting upward transfer of heat and salt prohibits sea-ice formation throughout the winter, subject to the freshwater input less than 0.4 m/yr. Because of the uncertainty of amount of the actual freshwater input in 1974, whether sea ice formed is ambiguous. However, the occurrence of the deep convection during the 1974 polynya formation is confirmed by summer data from 1975, showing the modification of deep water to be colder, fresher and richer in oxygen than in 1974. The upward heat flux through the deep convection resulted in the formation of the Weddell Polynya in 1974. (Auth.)

42-2144
Wave attenuation and wave drift in the marginal ice zone.
Weber, J.E., *Journal of physical oceanography,* Dec. 1987, 17(12), p.2351-2361, 27 refs.
Ocean waves, Sea ice, Ice edge, Viscous flow.

42-2145
Hubbard Glacier is still on the move.
Emery, P.A., et al, *Geotimes,* May 1987, 32(5), p.8-9.
Seitz, H.R.
Glacier flow, Glacier surges, Ice dams.

42-2146
Polar communications: status and recommendations. Report of the Science Working Group.
Rosenberg, T.J., ed, MP 2322, Greenbelt, MD, U.S. National Aeronautics and Space Administration, Dec. 1987, 29p., 3 refs.
Jezek, K.C., ed.
Spacecraft, Telecommunication, Design, Polar regions, Glaciology, Oceanography, Meteorology, Geophysics.
This report summarizes the capabilities of existing communication links within the polar regions, as well as between the polar regions and the continental United States. The report places these capabilities in the context of the objectives of principal scientific disciplines active in polar research and, in particular, of how discipline scientists both utilize and are limited by present technologies. Based on an assessment of the scientific objectives potentially achievable with improved communication capabilities, the report concludes with a list of requirements on and recommendations for communication capabilities necessary to support polar science over the next ten years. (Auth.)

42-2147
Remote-control methods of radiophysical investigations of glacial and water surfaces. [Radiofizicheskie issledovaniia lednikovoĭ i vodnoĭ poverkhnosteĭ distantsionnymi metodami],
Bogorodskiĭ, V.V., ed, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, 134p., In Russian. For individual papers see 42-2148 through 42-2160. Refs. passim.
Aerial surveys, Spaceborne photography, Infrared reconnaissance, Sea ice distribution, Ice surveys, Measuring instruments, Remote sensing, Radio echo soundings.

42-2148
Determining ice conditions of polar seas from radar measurements made from aerial and satellite ice surveys. [Opredelenie ledovoĭ obstanovki poliarnykh morei po rezul'tatam radiatsionnykh izmereniĭ s samoletov i sputnikov],
Bogorodskiĭ, V.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.5-17, In Russian. 6 refs.
Paramonov, A.I.
Aerial surveys, Spaceborne photography, Infrared reconnaissance, Sea ice distribution, Ice surveys, Measuring instruments.

42-2149
Estimating parameters of the analog-numerical transformations when using cepstrum method of measuring sea ice. [Otsenka parametrov analogo-tsifrovogo preobrazovaniia pri kepstral'nom metode izmereniia tolshchiny morskikh l'dov],
Bogorodskiĭ, V.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.18-23, In Russian. 5 refs.
Kozevich, O.P., Oganesian, A.G.
Sea ice distribution, Ice floes, Thickness, Radar echoes.

42-2150
Measuring the velocity of vertical electromagnetic wave propagation in the antarctic snow cover, in the frequency ranges 3, 7 and 10 GHz. [Izmerenie skorosti vertikal'nogo rasprostraneniia elektromagnitnykh voln diapazonov 3, 7 i 10 GGTs v antarkticheskom snezhnom pokrove],
Trepov, G.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.24-35, In Russian. 4 refs.
Pozniak, V.I.
Radio echo soundings, Snow depth, Snow physics, Radio waves, Velocity measurement.
Field measurements of vertical radiowave propagation velocities were made at five points, at distances of 44 to 376 km from sea shores. The least squares method was used supplemented with experimental relationships of the time interval between pulses reflected by snow surface and by a metallic reflector (a steel plate) buried in snow. Experimental relations and the calculation results are presented.

42-2151
Experimental evaluation of the contribution of focusing factor in total attenuation of radar signals when sounding shelf glaciers. [Eksperimental'naia otsenka vklada faktora fokusirovki v summarnoe oslablenie radiolokatsionnogo signala pri zondirovanii shel'fovogo lednika],
Boiarskiĭ, V.I., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.36-40, In Russian. 3 refs.
Ice shelves, Remote sensing, Aerial surveys, Ice cover thickness, Radar echoes, Attenuation.

42-2152
Scattering of the 3 cm range radar signals by sea ice at small (up to 10 degrees) slip angles. [Rasseianie radiolokatsionnykh signalov trekhsantimetrovogo diapazona morskim l'dom pri nebol'shikh (do 10 gradusov) uglakh skol'zheniia],
Bogorodskiĭ, V.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.41-49, In Russian. 4 refs.
Boiarskiĭ, V.I., Pavlov, V.V.
Sea ice, Ice surface, Aerial surveys, Radar echoes, Scattering.

42-2153
Application of polarization effects to the radiometry of ice. [Primenenie poliarizatsionnykh effektov v radiometrii l'dov],
Vagapov, R.Kh., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.50-67, In Russian. 6 refs.
Ice physics, Microwaves, Radar echoes, Reflection, Radiometry, Measuring instruments.

42-2154
Studying the Altai mountain glaciers using the pulsed radar detection methods and superhigh frequency ellipsometry. [Izuchenie lednikov Altaia metodami impul'snoĭ radiolokatsii i SVCh-ellipsometrii],
Nikitin, S.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy,* 1985, Vol.395, p.68-80, In Russian. 15 refs.
Mountain glaciers, Remote sensing, Radar echoes, Glacier beds, Glacier ice, Ice volume.

42-2155
Changes of radio-wave velocities with depth in subpolar glaciers. [Izmeneniia skorosti radiovoln po glubine subpoliarnogo lednika]
Macheret, IU.IA., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.395, p.81-89, In Russian. 15 refs.
Vasilenko, E.V., Gromyko, A.N., Zhuravlev, A.B.
Glacier ice, Radio echo soundings, Wave propagation, Velocity, Measuring instruments.

42-2156
Regional distribution of cloudiness screening infrared radiation of Arctic seas. [Regional'noe raspredelenie oblachnosti ekraniruiushchef IK izluchenie arkticheskikh morei]
Voevodina, S.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.395, p.90-94, In Russian.
Kirillov, V.A., Paramonov, A.I.
Ice surveys, Sea ice distribution, Spaceborne photography, Infrared reconnaissance, Cloud cover, Arctic Ocean.

42-2157
Remote sensing techniques of locating petroleum pollution of waters. [Distantsionnoe obnaruzhenie neftianykh zagriaznenii vod]
Kropotkin, M.A., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.395, p.95-107, In Russian. 17 refs.
Water pollution, Oil spills, Radar photography, Aerial surveys, Measuring instruments.

42-2158
Cloud cover effect in the infrared radiometry of snow-ice covers on arctic seas. [Effekt oblachnosti pri IK-radiometrii snezhno-ledianogo pokrova arkticheskikh morei]
Martynova, E.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.395, p.108-113, In Russian. 10 refs.
Melin, A.S.
Aerial surveys, Sea ice distribution, Infrared reconnaissance, Infrared radiation, Mapping, Ice cover thickness, Snow cover structure.

42-2159
Interpreting the airborne radar data on microwave radiation of sea ice. [Interpretatsiia rezul'tatov izmerenii mikrovolnovogo izlucheniia morskogo l'da s samoleta]
Bogorodskii, V.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.395, p.114-119, In Russian. 2 refs.
Darovskikh, A.N.
Aerial surveys, Microwaves, Mapping, Sea ice distribution, Ice physics, Airborne radar, Ice edge, Ice dating.

42-2160
Smoothing radar measurement readings of ice thickness. [O sglazhivanii pokazanii radiolokatsionnykh izmeritelei tolshchiny l'da]
Bogorodskii, V.V., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1985, Vol.395, p.120-127, In Russian. 4 refs.
Oganesian, A.G.
Ice surveys, Aerial surveys, Airborne radar, Ice cover thickness, Measuring instruments, Accuracy.

42-2161
Lipid and protein changes in cold- and drought-hardened cereals.
Cloutier, Y., *Phytoprotection*, 1987, 68(2), p.87-96, With French summary. 19 refs.
Freeze drying, Water content, Plant ecology, Cold tolerance, Frost resistance, Agriculture.

42-2162
Note on the presence of ice nucleation-active bacteria in roots of alfalfa grown in Quebec.
Richard, C., et al, *Phytoprotection*, 1987, 6(2), p.127-129, With French summary. 16 refs.
Gagné, S., Antoun, H.
Ice nuclei, Bacteria, Roots, Agriculture, Microbiology.

42-2163
Experimental research on the sublimation of ice samples.
Lambrinos, G., et al, *Annales geophysicae*, 1987, 5B(6), p.589-593, 9 refs.
Aguirre-Puente, J., Sakly, M.
Ice sublimation, Heat transfer, Mass transfer, Freeze drying, Phase transformations, Models, Experimentation, Air flow, Temperature effects.

42-2164
Convection in thawing subsea permafrost.
Galdi, G.P., et al, *Royal Society of London. Proceedings. Series A*, Nov. 1987, 414(1846), p.83-102, 26 refs.
Payne, L.E., Proctor, M.R.E., Straughan, B.
Subsea permafrost, Permafrost thermal properties, Bottom sediment, Convection, Sea level, Paleoclimatology, Mathematical models.

42-2165
Effects of snow and ice on the annual cycles of heat and light in Saqvaqjuac Lakes.
Welch, H.E., et al, *Canadian journal of fisheries and aquatic sciences*, Aug. 1987, 44(8), p.1451-1461, With French summary. 32 refs.
Legault, J.A., Bergmann, M.A.
Limnology, Plankton, Ice cover effect, Snow cover effect, Light transmission, Temperature distribution, Lake water, Heat balance, Biomass.

42-2166
Influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.1. [Tezisy dokladov. Vol.1]
Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987, Syktyvkar, 1987, 189p., In Russian. For selected papers see 42-2167 through 42-2169. Refs. passim.
Puzachenko, IU.G., ed.
Taiga, Paludification, Subsurface drainage, Peat, Permafrost hydrology, Frost heave, Frost mounds, Organic soils, Cryogenic soils, Forest soils, Forest tundra.

42-2167
Role of the hydrologic regime in the growth of common pine on Yakutian massive sands subject to aeolian action. [Rol' gidrologicheskogo rezhima v proizrastanii sosny obyknovennoi na tukulanakh IAkutii]
Boĭchenko, A.M., Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.1. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.1) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.53-54, In Russian.
Mountains, Cryogenic soils, Sands, Thermal regime, Vegetation, Plant ecology, Permafrost hydrology, Active layer.

42-2168
Forecasting the development of migratory frost mounds in the northern taiga-forest tundra zone. [Prognoz razvitiia migratsionnykh bugrov pucheniia v zone lesotundry i severnoi taigi]
Evseev, V.P., Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.1. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.1) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.55-56, In Russian.
Swamps, Peat, Permafrost structure, Frost heave, Ground ice, Ice growth, Frost mounds, Active layer, Taiga, Forest tundra.

42-2169
Rational use of peat soils under northern taiga conditions, Komi ASSR. [K voprosu ratsional'nogo ispol'zovaniia torfianykh pochv v usloviiakh severnoi taigi Komi ASSR]
Kochetkova, V.L., et al, Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.1. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.1) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.58-59, In Russian.
Shesterikova, A.N.
Taiga, Paludification, Peat, Surface drainage, Subsurface drainage, Channels (waterways), Permafrost hydrology.

42-2170
Influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.2. [Tezisy dokladov. Vol.2]
Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987, Syktyvkar, 1987, 136p., In Russian. For selected papers see 42-2171 through 42-2175. Refs. passim.
Puzachenko, IU.G., ed.
Mathematical models, Tundra, Taiga, Climatic changes, Ecology, Biomass, Human factors, Soil water migration, Paludification, Forest soils, Drainage.

42-2171
Influence of the hydrological regime of soils, related to drainage, on the structure, functioning and rational exploitation of cryo-arid biogeocenoses of the Central Asia type. [Vliianie gidrologicheskogo rezhima pochv, sviazannogo so stokom, na strukturu, funktsionirovanie i ratsional'nuiu ekspluatatsiiu krio-aridnykh biogeotsenozov tsentral'no-aziatskogo tipa]
Stebaev, I.V., et al, Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.2. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.2) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.95-96, In Russian.
Arakcha, L.K.
Desert soils, Soil freezing, Plant ecology, Freeze thaw cycles, Steppes, Soil water migration.

42-2172
Method of mathematical modeling for studying ground water regime in drained bogs. [Metod matematicheskogo modelirovaniia pri izuchenii rezhima gruntovykh vod osushennykh lesnykh bolot]
Vomperskii, S.E., et al, Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.2. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.2) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.110-111, In Russian.
Rubtsov, V.V.
Forest land, Paludification, Forest soils, Drainage, Mathematical models.

42-2173
Model of seepage flow in the active layer of a swamp. [Model' dvizheniia fil'tratsionnogo potoka v deiatel'nom sloe bolota]
Rudnev, N.I., Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.2. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.2) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.112-113, In Russian.
Peat, Swamps, Water transport, Flow rate, Soil temperature, Mathematical models.

42-2174
Mathematical modeling of water content of a catchment section. [Matematicheskoe modelirovanie vlagosoderzhaniia na uchastke vodosbora]
Zaĭdel', E.R., Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.2. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.2) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.116-117, In Russian.
Soil water migration, Water content, Mathematical models, Ground water, Alimentation, Aeration, Evaporation, Transpiration.

42-2175
Modeling structural and functional changes in the taiga and tundra biogeocenoses under man-induced climatic changes. [Modelirovanie strukturno-funktsional'nykh izmeneniĭ taezhnykh i tundrovykh biogeotsenozov pri antropogennykh izmeneniiakh klimata],
Bogatyrev, B.G., et al, Vsesoiuznoe soveshchanie Vliianie gidrologicheskogo rezhima na strukturu i funktsionirovanie biogeotsenozov, Syktyvkar, Sep. 22-25, 1987. Vol.2. (All-Union conference on the influence of the hydrologic regime on the structure and functioning of biogeocenoses, Syktyvkar, Sep. 22-25, 1987. Summaries of papers. Vol.2) edited by IU.G. Puzachenko, Syktyvkar, 1987, p.129-130, In Russian.
Kirilenko, A.P., Tarko, A.M.
Mathematical models, Climatic changes, Human factors, Tundra, Taiga, Biomass, Soil temperature, Soil chemistry, Litter, Precipitation (meteorology).

42-2176
Microbial degradation of hydrocarbon mixtures in a marine sediment under different temperature regimes.
Thorpe, J.W., et al, *Environmental Studies Research Funds. Report,* Sep. 1987, No.83, 78p., With French summary. 19 refs.
Hellenbrand, K.E.
Oil spills, Degradation, Bacteria, Hydrocarbons, Marine deposits, Countermeasures, Temperature effects. Beaches.

42-2177
Prototype, mesoscale simulator for the study of oil weathering under severe conditions.
Pelletier, E., et al, *Environmental Studies Research Funds. Report,* Nov. 1987, No.86, 55p., With French summary. Refs. p.51-55.
Brochu, C.
Oil spills, Ice conditions, Weathering, Crude oil, Sea ice, Bacteria, Temperature effects, Chemical composition.

42-2178
Undercooled water in basaltic regoliths and implications for fluidized debris flows on Mars.
Gooding, J.L., *Icarus,* Dec. 1987, 72(3), p.519-527, 22 refs.
Supercooling, Extraterrestrial ice, Mars (planet).

42-2179
Nitrogen dynamics in a marginal sea-ice zone.
Müller-Karger, F., et al, *Continental shelf research,* July 1987, 7(7), p.805-823, Refs. p.820-823.
Alexander, V.
Ice edge, Plankton, Sea water, Water chemistry, Marine biology, Nutrient cycle.

42-2180
Seasonal variations in the modes of heat transfer in a moist porous thermal insulation in a flat roof.
Hedlin, C.P., *Journal of thermal insulation,* July 1987, Vol.11, p.54-66, 8 refs.
Roofs, Thermal insulation, Porous materials, Heat transfer, Moisture.

42-2181
Studies of ground water runoff and naleds. [Issledovaniia podzemnogo stoka i naledeĭ],
Popov, O.V., ed, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1987, No.314, 176p., In Russian. For selected papers see 42-2182 through 42-2186. Refs. passim.
Sokolov, B.L., ed.
River basins, Naleds, Permafrost hydrology, Subsurface drainage, Ice formation, Ice cover thickness, Baykal Amur railroad.

42-2182
River naleds in the Baykal Amur railroad area. [Rechnye naledi zony BAMa],
Sokolov, B.L., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1987, No.314, p.3-43, In Russian. 38 refs.
Lifshits, F.A., Markov, M.L.
River basins, Permafrost distribution, Permafrost hydrology, Naleds, Alimentation, Ice formation, Ice cover thickness.

42-2183
Calculation of naled hydrograph. [Raschet gidrografa naledmogo stoka],
Markov, M.L., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1987, No.314, p.44-66, In Russian. 13 refs.
Naleds, Ice formation, Alimentation, Ice (water storage), Ice melting, Runoff.

42-2184
Studies and the calculation of melting of groundwater naleds. [Issledovanie i raschet taianiia naledeĭ podzemnykh vod],
Delkin, B.N., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1987, No.314, p.67-89, In Russian. 19 refs.
River basins, Naleds, Ice formation, Ice cover thickness, Ice melting, Heat balance, Water balance, Ice density, Ice optics.

42-2185
Estimating the accuracy of measuring morphometric characteristics of naleds. [Otsenka tochnosti izmereniia morfometricheskikh kharakteristik naledeĭ],
Kolotaev, V.N., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1987, No.314, p.90-114, In Russian. 14 refs.
Markov, M.L., Sokolov, B.L.
Naleds, Geomorphology, Ice cover thickness, Ice accretion, Ice volume.

42-2186
Water-balance characteristics of the formation of ground-water runoff in river basins of folded mountain areas. [O vodnobalansovykh osobennostiakh formirovaniia podzemnogo stoka v rechnykh bassefnakh gorno-skladchatykh oblastefi],
Amus'ia, A.Z., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1987, No.314, p.115-135, In Russian. 16 refs.
Ratner, N.S.
River basins, Snow water equivalent, Water reserves, Glacier ice, Moraines, Permafrost distribution, Permafrost hydrology, USSR—Caucasus.

42-2187
Cloud physics. [Fizika oblakov],
Pastushkov, R.S., ed, *Moscow. Tsentral'naia aerologicheskaia observatoriia. Trudy,* 1987, Vol.163, 134p., In Russian with English summary. For selected paper see 42-2188. 7 refs.
Weather modification, Cloud physics, Cloud seeding, Artificial nucleation, Artificial precipitation, Mathematical models.

42-2188
Modeling orographic clouds allowing for the microstructure of water and ice phases. [Modelirovanie orograficheskikh oblakov s uchetom mikrostruktury kapel'noĭ i kristallicheskoĭ faz],
Toroian, G.R., et al, *Moscow. Tsentral'naia aerologicheskaia observatoriia. Trudy,* 1987, Vol.163, p.81-92, In Russian with English summary. 7 refs.
Khvorost'ianov, V.I.
Mathematical models, Clouds (meteorology), Microstructure, Cloud droplets, Ice crystals.

42-2189
Proceedings of the Symposium: Snow Management for Agriculture, [1985].
Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, 716p., Refs. passim. For selected papers see 42-2190 through 42-2224.
Steppuhn, H., ed, Nicholaichuk, W., ed.
Snow retention, Water retention, Plant ecology, Agriculture, Meetings, Snow water equivalent, Snow depth, Snow fences, Models.

42-2190
Snow management on the Great Plains and prairies of North America.
Willis, W.O., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.3-6.
Snow retention, Snow accumulation, Soil water, Agriculture, Plant ecology, Snow cover distribution, Climatic factors.

42-2191
Snow erosion, transport, and deposition in relation to agriculture.
Tabler, R.D., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.11-58, Refs. p.52-58.
Schmidt, R.A.
Blowing snow, Snow erosion, Snow mechanics, Snow accumulation, Agriculture, Snow physics, Surface roughness, Snowdrifts, Snow water equivalent, Snow fences, Snow retention.

42-2192
Snowdrift modeling in a wind tunnel.
Iversen, J.D., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.59-72, 19 refs.
Snowdrifts, Wind tunnels, Snowstorms, Snow density, Mathematical models, Snowflakes, Wind velocity.

42-2193
Physical modelling of blowing snow for agricultural production.
Pomeroy, J.W., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.73-108, Refs. p.106-108.
Male, D.H.
Blowing snow, Snow mechanics, Sublimation, Meteorological factors, Topographic features, Agriculture, Vegetation factors, Soil water, Mathematical models.

42-2194
Potentials for harvesting water from snow.
Caprio, J.M., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.109-131, 6 refs.
Snow hydrology, Snow water equivalent, Snow depth, Snow density, Soil water, Precipitation (meteorology), Frozen ground, Frost penetration, Snowfall, Snow evaporation.

42-2195
Probability of snow cover in North Dakota.
Enz, J.W., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.133-148, 12 refs.
Larsen, J.K., Brun, L.J.
Snow cover distribution, Snowfall, Snow depth, Air temperature, Vegetation factors.

42-2196
Possibilities for snow management in Saskatchewan.
De Jong, E., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.149-166, 12 refs.
Kachanoski, R.G., Rapp, B.A.
Snowfall, Snow water equivalent, Snow accumulation, Snow retention, Soil water, Climatic factors, Runoff, Agriculture, Drainage, Vegetation factors.

42-2197
Snow management for agriculture: the macro view.
Veeman, T.S., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.167-182, 17 refs.
Snow accumulation, Water supply, Snow retention, Soil conservation, Irrigation, Water reserves, Agriculture.

42-2198
Application and evaluation of decision models.
Snyder, J.R., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.183-201, 8 refs.
Skold, M.D., Willis, W.O.
Snow retention, Snowfall, Snow hydrology, Soil water, Climatic factors, Models, Agriculture.

42-2199
Effect of snow depth and air temperature on soil temperature and winter wheat survival.
Brun, L.J., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.205-218, 8 refs.
Larsen, J.K., Enz, J.W., Cox, D.J.
Snow depth, Soil temperature, Snow cover effect, Air temperature, Agriculture, Statistical analysis, Models.

42-2200
Importance of snowcover insulation for winter crops in Saskatchewan.
Fowler, D.B., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.219-234, 13 refs.
Limin, A.E.
Snow cover effect, Thermal insulation, Snow depth, Air temperature, Agriculture, Cold tolerance.

42-2201
Influence of snow depth and soil moisture throughout the winter on alfalfa winter survival in southwestern Saskatchewan.
Jame, Y.W., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.235-251.
Lawrence, T., Steppuhn, H.
Snow depth, Soil water, Cold tolerance, Snow cover effect, Agriculture, Air temperature, Frozen ground, Plant tissues, Damage, Frost heave, Thermal insulation.

42-2202
Effect of fall stubble management on overwinter soil moisture storage and crop yield.
Patterson, G.W., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.273-287, 13 refs.
De Jong, E., Kachanoski, R.G.
Soil water, Vegetation factors, Water retention, Frozen ground, Snow retention, Meltwater, Agriculture, Water balance, Soil temperature, Snow depth, Snow density.

42-2203
Study plan for heat and water transport in frozen soils, North Dakota.
Emerson, D.G., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.289-298, 19 refs.
Frozen ground physics, Heat transfer, Water transport, Snow depth, Snow retention, Runoff, Models, Hydraulics, Agriculture.

42-2204
Snowmelt infiltration to uncracked, cracked and subsoiled frozen soils.
Gray, D.M., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.299-319, 4 refs.
Granger, R.J., Nicholaichuk, W.
Snowmelt, Frozen ground physics, Seepage, Soil water, Cracking (fracturing), Snow water equivalent, Meltwater.

42-2205
Snow management for moisture enhancement in central Alberta.
Chanasyk, D.S., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.321-330.
Snow water equivalent, Soil water, Water level, Snow retention, Vegetation factors, Agriculture.

42-2206
Snow water management for crop production.
Smika, D.E., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.335-344, 5 refs.
Page, A.B., Mickelson, R.H.
Snow water equivalent, Snowmelt, Snow retention, Snowfall, Agriculture.

42-2207
Snow management and reduced tillage from a grain farmer's viewpoint.
McLean, L.A., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.369-373.
Snow retention, Snow accumulation, Soil water, Agriculture.

42-2208
Snow and fertilizer management for spring wheat grown on zero till.
Campbell, C.A., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.375-399, 2 refs.
Snow retention, Snow accumulation, Snow water equivalent, Nutrient cycle, Soil water, Snow depth, Vegetation factors, Agriculture.

42-2209
Benefits of snow management and N fertilization on sagebrush range.
Sturges, D.L., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.403-430, 21 refs.
Snow retention, Soil water, Snow accumulation, Nutrient cycle, Agriculture, Snowfall, Snow mechanics.

42-2210
Shrubs for living snow fences on the central Great Plains.
Laycock, W.A., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.431-457, 17 refs.
Shoop, M.C.
Snow retention, Snow fences, Plant ecology, Snowdrifts, Vegetation, Agriculture.

42-2211
Cropping system's dependence on snow management.
Black, A.L., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.461-475, 7 refs.
Aase, J.K.
Snow retention, Precipitation (meteorology), Grasses, Soil water, Agriculture.

42-2212
Snow management practices for trapping snow in a prairie environment.
Nicholaichuk, W., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.479-499, 10 refs.
Gray, D.M., Steppuhn, H., Dyck, F.B.
Snow retention, Snow cover distribution, Snow depth, Snow water equivalent, Snow accumulation, Agriculture.

42-2213
Snow management and winter grain cropping systems.
Fowler, D.B., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.501-512, 13 refs.
Snow retention, Snow depth, Soil erosion, Countermeasures, Agriculture.

42-2214
Snow management and cropping systems on the Erickson farm.
Erickson, D., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.513-521.
Snow retention, Soil water, Snowfall, Agriculture, Water supply, Vegetation factors.

42-2215
Snow management in prairie grain production—a producer's report.
Reisner, C., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.523-529.
Snow retention, Soil water, Snow cover distribution, Agriculture.

42-2216
Economic and social aspects of snow management.
Skold, M.D., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.534-554, 22 refs.
Snyder, J.R., Willis, W.O., Olienyk, J.P.
Snow retention, Snow water equivalent, Economic analysis, Agriculture, Snow removal, Roads, Wind erosion.

42-2217
Economic potential of snow management in the Dakotas.
Snyder, J.R., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.565-585, 8 refs.
Skold, M.D., Willis, W.O.
Snow retention, Water supply, Soil water, Vegetation factors, Economic analysis, Agriculture.

42-2218
Hydrologic implications of snow management.
Richards, D.R., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.585-597.
Snow retention, Water retention, Snowmelt, Runoff, Water supply, Flood control, Agriculture.

42-2219
Snow management and drought.
Dyer, J.A., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.599-611, 7 refs.
Snow retention, Soil water, Water level, Monitors, Computer applications, Models, Grasses.

42-2220
Benefit/cost ratios for snow management techniques in semiarid climates.
Steppuhn, H., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.613-656, Refs. p.654-656.
Erickson, D., Zentner, R.P., Nicholaichuk, W.
Snow retention, Snowfall, Snow accumulation, Soil water, Cost analysis, Agriculture, Design, Snow depth, Snow water equivalent.

42-2221
Colorado interagency living snow fence program.
Shaw, D., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.657-660.
Adams, B.
Snow hedges, Snow retention, Forest strips, Snowdrifts, Plants (botany), Agriculture.

42-2222
Energy conservation and management of snow.
Rutherford, A.A., et al, *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.663-679, 18 refs.
Coxworth, E.W.
Snow retention, Soil water, Vegetation factors, Agriculture.

42-2223
Snow management for enhanced soil and water conservation.
Luciuk, G.M., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.681-702, Refs. p.700-702.
Snow retention, Water retention, Soil water, Snowmelt, Soil erosion, Countermeasures, Agriculture.

42-2224
Snow as an energy factor in western Canadian agriculture.
Sawatzky, H.L., *Nebraska. University. Great Plains Agricultural Council. Publication,* 1986, No.120, Symposium: Snow Management for Agriculture, Swift Current, Saskatchewan, Canada, 1985. Edited by H. Steppuhn and W. Nicholaichuk, p.703-715, 20 refs.
Snow retention, Soil water, Heat transfer, Snow depth, Soil erosion, Freeze thaw cycles, Frost penetration, Agriculture, Latent heat.

42-2225
Studies, calculations and forecasts of ice phenomena on rivers and reservoirs. [Issledovaniia, raschety i prognozy ledovykh iavlenii na rekakh i vodokhranilishchakh],
Donchenko, R.V., ed, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, 95p., In Russian. For individual papers see 42-2226 through 42-2233. Refs. passim.
River ice, Ice cover thickness, Air temperature, Icebound rivers, Ice breakup, Ice jams, Flooding, Water level, Mathematical models.

42-2226
Methods of calculating water levels for ice-jams and ice blocking on regulated river reaches. [Metody rascheta zazhornykh i zatornykh urovneĭ vody na zaregulirovannykh uchastkakh rek],
Donchenko, R.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.3-18, In Russian. 18 refs.
Ice breakup, Water level, Ice jams, Ice deterioration, Slush, Icebound rivers, Analysis (mathematics).

42-2227
Forecasting maximum water levels of the Severnaya and Zapadnaya Dvina rivers during ice jams and ice clogging. [Prognozy maksimal'nykh zazhornykh i zatornykh urovneĭ vody rek Severnoĭ i Zapadnoĭ Dviny],
Buzin, V.A., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.19-27, In Russian. 4 refs.
Chachina, N.S., Shanochkin, S.V.
Icebound rivers, Ice breakup, Ice jams, Water level.

42-2228
Calculating the parameters of break-through waves for ice jams. [Raschet parametrov voln proryva zatora l'da],
Bolotnikov, G.I., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.28-30, In Russian. 1 ref.
Icebound rivers, Ice breakup, Ice jams, Flooding, Ice surveys.

42-2229
Estimated characteristics of ice regime in the lower tail-water of the Cheboksary Hydroelectric Power Plant. [Prognoznaia otsenka kharakteristik ledovogo rezhima nizhnego b'efa Cheboksarskoĭ GES],
Donchenko, R.V., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.31-45, In Russian. 5 refs.
Filippov, A.M.
Ice conditions, Ice cover thickness, Icebound rivers, Ice breakup, Ice jams, Electric power.

42-2230
Calculating ice pileup in river beds. [Raschet navalov l'da v ruslakh rek],
Kozitskiĭ, I.E., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.46-50, In Russian. 2 refs.
Icebound rivers, Ice breakup, Ice jams, Ice pileup.

42-2231
Accuracy of calculating ice thickness from the sum of subzero air temperatures. [Analiz tochnosti raschetov tolshchiny l'da po summe otritsatel'nykh temperatur vozdukha],
Chizhov, A.N., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.51-56, In Russian. 3 refs.
Alekseenko, R.IA.
River ice, Ice cover thickness, Analysis (mathematics), Air temperature.

42-2232
Snow cover effect on the accuracy of measuring ice thickness with radar frequency modulation meters. [Vliianie snezhnogo pokrova na tochnost' izmereniia tolshchiny l'da radiolokatsionnym izmeritelem s chastotnoĭ modulitsieĭ],
IUfit, G.A., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.57-80, In Russian. 8 refs.
Chizhov, A.N.
River ice, Ice cover thickness, Radar echoes, Ice surveys, Snow cover effect, Measuring instruments, Experimentation.

42-2233
Changes in thermal regime of the Ob' and Irtysh rivers induced by flow control. [Izmenenie termicheskogo rezhima rek Obi i Irtysha pod vliianiem regulirovaniia stoka],
Donchenko, R.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1986, Vol.323, p.81-85, In Russian. 3 refs.
Stream flow, Rivers, Water temperature, Thermal regime, Permafrost beneath rivers, Charts, Hydrology.

42-2234
Arctic ice in a seasonal thermodynamic climate model. [Arkticheskiĭ led v sezonnoĭ termodinamicheskoĭ modeli klimata],
Volovikov, S.A., et al, *Moscow. Institut eksperimental'noĭ meteorologii. Trudy,* 1987, Vol.43, p.45-50, In Russian. 13 refs.
Kolomeev, M.P.
Sea ice distribution, Ice cover thickness, Ice growth, Pressure ridges, Drift, Phase transformations, Sea ice, Climatology, Polar regions, Mathematical models.

42-2235
Analysis of the intensive icing conditions at Saratov airport during Dec. 1-7, 1981. [Analiz uslovĭ vozniknoveniia intensivnogo otlozheniia gololeda v aeroportu Saratov v period s 1 po 7 dekabria 198i g.],
Maksimovich, S.N., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1987, Vol.288, p.92-99, In Russian. 4 refs.
Airports, Road icing, Pavements, Ice accretion, Icing rate, Meteorological factors, Synoptic meteorology.

42-2236
Method of forecasting, one month in advance, the sum of winter precipitation for the European USSR. [Sposob prognoza polia summ zimnikh osadkov v Evropeĭskoĭ chasti SSSR s mesiachnoĭ zablagovremennost'iu],
Simonov, A.A., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1987, Vol.287, p.115-127, In Russian. 7 refs.
Precipitation (meteorology), Snow, Ice forecasting, Frost forecasting.

42-2237
Chemical data on soil samples from King George Island. [Datos quimicos de muestras de suelos de la isla Rey Jorge, islas Shetland del Sur],
Luzio, W., et al, *Santiago de Chile. Instituto Antártico Chileno. Serie cientifica,* 1987, No.36, p.147-150, In Spanish with English summary. 5 refs.
Carrasco, A., Torres, T.
Glacial deposits, Soil composition, Soil chemistry, Antarctica—King George Island.
Surface glacial sediments from 3 locations on King George I., were sampled for an exploratory study of their chemical properties. The results show that these sediments have a high base saturation accounted for by a low-level leaching regime. These materials also have a high cation exchange capacity which, along with the low base leaching, would be an indication of the presence of some kind of smectite-type minerals. (Auth.)

42-2238
Estimating the peculiarities of thermal regime of soils during cold periods. [Otsenka osobennosteĭ termicheskogo rezhima pochvy v kholodnyĭ period],
Goryshina, N.G., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy,* 1986, Vol.502, Mezo- i mikroklimatologiia (Meso- and microclimatology) edited by E.N. Romanova, p.77-85, In Russian. 6 refs.
Soil freezing, Microclimatology, Thermal regime, Frost penetration, Seasonal freeze thaw, Organic soils, Sands, Peat, Clays, Loams.

42-2239
Mesoclimatic regionalization of the Krasnoyarsk area according to ice loads. [Mezoklimaticheskoe raĭonirovanie territorii Krasnoiarskogo kraia po gololednym nagruzkam],
Zakharov, A.G., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy,* 1986, Vol.502, Mezo- i mikroklimatologiia (Meso- and microclimatology) edited by E.N. Romanova, p.119-126, In Russian. 8 refs.
Icing, Hoarfrost, Buildings, Structures, Ice loads, Topographic effects.

42-2240
Using the Pearson III distribution equation and its logarithmic modification in calculating dates of ice phenomena. [Ispol'zovanie raspredeleniia Pirsona III tipa i ego logarifmicheskoĭ modifikatsii v raschetakh dat ledovykh iavleniĭ],
Zalesskiĭ, V.F., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1986, Vol.283, Voprosy gidrologicheskikh prognozov i raschetov (Hydrological forecasts and calculations) edited by A.V. Romanov, p.69-74, In Russian. 2 refs.
Icebound rivers, Ice forecasting, Icebound lakes, Ice dating, Ice formation, Ice breakup, Analysis (mathematics).

42-2241
Calculation and analysis of ice cover growth on reservoirs of the Upper and central Volga River, for extending navigation periods. [Raschet i analiz rezhima narastaniia ledianogo pokrova na vodokhranilishchakh Verkhneĭ i Srednetĭ Volgi dlia tseleĭ prodleniia navigatsiĭ],
Podsechina, T.V., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1986, Vol.283, Voprosy gidrologicheskikh prognozov i raschetov (Hydrological forecasts and calculations) edited by A.V. Romanov, p.75-82, In Russian. 6 refs.
Icebound rivers, Icebound lakes, Ice navigation, Ice cover thickness, Ice forecasting, Icebreakers.

42-2242
Parametrization of microphysical processes allowing for crystalline phases of clouds and precipitation. [Parametrizatsiia mikrofizicheskikh protsessov s uchetom kristallicheskoĭ fazy oblakov i osadkov],
Vel'tishchev, N.F., et al, *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1986, Vol.284, Voprosy gidrodinamicheskogo kratkosrochnogo prognoza pogody i mezometeorologiia (Hydrodynamic short-range weather forecasting and mesometeorology) edited by D.IA. Pressman, p.3-11, In Russian. 22 refs.
Polezhaev, A.A.
Cloud physics, Mathematical models, Supercooled clouds, Ice crystals, Snow crystals, Phase transformations, Water vapor, Crystal growth, Precipitation (meteorology).

42-2243
Snow depth effect on the formation of mean monthly air temperature anomaly over the European USSR, western Siberia and Kazakhstan. [Vliianie vysoty snezhnogo pokrova na formirovanie anomalii srednetĭ mesiachnoĭ temperatury vozdukha na Evropeĭskoĭ territorii SSSR, v Zapadnoĭ Sibiri i Kazakhstane],
Golubev, V.E., et al, *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1987, Vol.293, Metody dolgosrochnykh prognozov pogody (Long range weather forecasting methods) edited by N.I. Zverev, N.A. Bagrov and A.V. Popov, p.64-69, In Russian. 7 refs.
Babkin, A.V.
Air temperature, Snow cover effect.

42-2244
Development and causes of the rise in chlorides in ground water. [Beitrag zur Entwicklung und den Ursachen des Chloridanstiegs im Grundwasser],
Bischofsberger, W., et al, *Technische Universität, Munich, FRG. Lehrstuhl und Prüfamt für Wassergütewirtschaft und Gesundheitsingenieurwesen. (Bericht),* 1986, REPT-63, 190p., TIB/A86-80561, In German.
Weigelt, R., Klebe, S.
Ground water, Water chemistry, Meltwater, Snow melting, Salting, Ice melting, Road icing, Water pollution.

42-2245
1969-1971 winter test reports.
U.S. National Safety Council. Traffic Division. Committee on Winter Driving Hazards, Stevens Point, WI, 1969-1971, 2 issues, For 1973-1980 reports see 42-2142.
Winter maintenance, Tires, Road icing, Brakes (motion arresters), Safety, Equipment, Snow cover effect, Ice cover effect.

42-2246
New approach for sizing rapid infiltration systems.
Martel, C.J., *Journal of environmental engineering,* Feb. 1988, 114(1), MP 2323, p.211-215, 13 refs.
Waste treatment, Water treatment, Seepage.

42-2247
Some models of ice melt on high level lakes in southwest Norway.
Skorve, J., *Photogrammetric engineering and remote sensing,* Nov. 1987, 53(11), p.1565-1570, 10 refs.
Ice melting, Lake ice, Remote sensing.

42-2248
First offshore Alaskan Arctic pipelines nearing completion for Endicott field.
Greene, J.A., *Oil and gas journal,* Aug. 10, 1987, 85(32), p.33-40.
Offshore structures, Pipelines, Pipeline supports, Foundations.

42-2249
Applications of the interaction of microwaves with the natural snow cover.
Mätzler, C., *Remote sensing reviews,* Oct. 1987, 2(2), p.259-387, Refs. p.380-387.
Snow electrical properties, Dielectric properties, Microwaves, Remote sensing.

42-2250
Bifurcated hydrogen-bond model of water and amorphous ice.
Giguère, P.A., *Journal of chemical physics,* Oct. 15, 1987, 87(8), p.4835-4839, 44 refs.
Hydrogen bonds, Water structure, Amorphous ice, Molecular structure.

42-2251
Hydrogeochemical zonality of western Yakutia. [Gidrogeokhimicheskaia zonal'nost' Zapadnoĭ lAkutii],
Borisov, V.N., et al, Zemnaia kora i verkhniaia mantiia Vostochnoĭ Sibiri (Earth crust and the upper mantle of East Siberia) edited by M.I. Grudinin and A.I. Kiselev, Irkutsk, 1987, p.146-153, In Russian.
Alekseev, S.V., Klimov, A.IU., Pleshevenkova, V.A.
Permafrost distribution, Permafrost depth, Permafrost hydrology, Subpermafrost ground water, Water chemistry, Composition.

42-2252
Dynamics of engineering-geological processes in economically developing regions of eastern Siberia. [Dinamika inzhenerno-geologicheskikh protsessov v osvaivaemykh raĭonakh iuga Vostochnoĭ Sibiri],
Trzhtsinskiĭ, IU.B., et al, Zemnaia kora i verkhniaia mantiia Vostochnoĭ Sibiri (Earth crust and the upper mantle of East Siberia) edited by M.I. Grudinin and A.I. Kiselev, Irkutsk, 1987, p.153-161, In Russian. 12 refs.
Leshchikov, F.N.
Engineering geology, Permafrost structure, Ice volume, Rheology, Permafrost thermal properties, Slope processes, Freeze thaw cycles, Solifluction.

42-2253
Evaluating the dynamics of lake ice, snow cover and river floodwaters by remote sensing (a practical manual). [Otsenka dinamiki ozernykh l'dov, snezhnogo pokrova i rechnykh razlivov distantsionnymi sredstvami (prakticheskoe posobie)],
Usachev, V.F., et al, Leningrad, Gidrometeoizdat, 1985, 104p., In Russian with English table of contents enclosed. 15 refs.
Prokacheva, V.G., Borodulin, V.V.
Lake ice, Ice conditions, Ice breakup, Drift, Spaceborne photography, Photointerpretation, Ice surveys, River ice, Snow cover distribution, Snow water equivalent, Snow line, Flooding.

42-2254
Experimental calculation of masses of ice-hoarfrost deposits from indirect data. [Opytnyĭ raschet mass gololedno-izmorozevykh otlozheniĭ po kosvennym dannym],
Mytarev, M.N., *Moscow. Tsentral'naia vysotnaia gidrometeorologicheskaia observatoriia. Trudy,* 1985, Vol.22, Pogoda i klimat Moskvy i Moskovskoĭ oblasti (Weather and climate of Moscow and the Moscow region) edited by F.IA. Klinov, p.78-83, In Russian. 9 refs.
Power line icing, Hoarfrost, Ice loads, Ice accretion, Glaze.

42-2255
Seasonal freezing of ground on bare sections and under natural cover in Moscow (from data of the meteorological observatory of Moscow State University). [Sezonnoe promerzanie gruntov na ogolennom uchastke i pod estestvennym pokrovom v Moskve (po dannym meteorologicheskoĭ observatorii MGU)],
Lipovetskaia, O.N., et al, *Moscow. Tsentral'naia vysotnaia gidrometeorologicheskaia observatoriia. Trudy,* 1985, Vol.22, Pogoda i klimat Moskvy i Moskovskoĭ oblasti (Weather and climate of Moscow and the Moscow region) edited by F.IA. Klinov, p.113-118, In Russian.
Nikol'skaia, N.P.
Foundations, Soil freezing, Soil temperature, Frost penetration, Vegetation factors, Seasonal freeze thaw, Snow cover effect, Frozen ground thermodynamics.

42-2256
Downslope stone transport by needle ice in a high Andean area (Venezuela).
Pérez, F.L., *Revue de géomorphologie dynamique,* 1987, 36(2), p.33-51, With French and Spanish summaries. 59 refs.
Ice needles, Slope processes, Rocks, Mountains, Venezuela.

42-2257
Periglacial processes and landforms in Britain and Ireland.
Boardman, J., ed, Cambridge, University Press, 1987, 296p., Refs. passim. For selected papers see 42-2258 through 42-2272.
DLC GB588.43.P47 1987
Periglacial processes, Landforms, Geomorphology, Paleoclimatology, Landscape development, Pleistocene, Soil weathering, United Kingdom.

42-2258
Periglacial forms of Svalbard: a review.
Åkerman, J., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.9-25, Refs. p.23-25.
Periglacial processes, Landforms, Geomorphology, Climatic factors, Distribution, Aerial surveys, Patterned ground, Thermokarst, Norway—Svalbard.

42-2259
Periglacial processes and landforms in the western Canadian Arctic.
French, H.M., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.27-43, Refs. p.41-43.
Periglacial processes, Landforms, Tundra, Deserts, Mountains, Climatic factors, Pleistocene, Permafrost, Canada.

42-2260
Periglacial phenomena of northern Fennoscandia.
Seppälä, M., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.45-55, 59 refs.
Periglacial processes, Discontinuous permafrost, Frost action, Geomorphology, Pingos, Frost mounds, Polygonal topography, Pleistocene, Distribution, Climatic factors.

42-2261
Spatial and temporal trends in alpine periglacial studies: implications for paleo reconstruction.
Thorn, C.E., et al, Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.57-65, 53 refs.
Loewenherz, D.S.
Periglacial processes, Landforms, Climatic factors, Paleoclimatology, Geomorphology, Sediments, Mountains.

42-2262
Pleistocene periglacial conditions and geomorphology in north central Europe.
Karte, J., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.67-75.
Periglacial processes, Pleistocene, Geomorphology, Climatic changes, Landforms, Paleoclimatology.

42-2263
Weichselian periglacial structures and their environmental significance: Belgium, the Netherlands, and northern France.
Pissart, A., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.77-85, With French summary. Refs. p.83-85.
Periglacial processes, Paleoclimatology, Glaciation, Stratigraphy, Ice wedges, Frost mounds.

42-2264
Present-day periglaciation of upland Britain.
Ballantyne, C.K., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.113-126, Refs. p.124-126.
Periglacial processes, Climatic factors, Landforms, Patterned ground, Wind factors, Mountains.

42-2265
Frost weathered mantles on the Chalk.
Williams, R.B.G., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.127-133, 26 refs.
Frost weathering, Periglacial processes, Frozen rocks, Geomorphology, Paleoclimatology.

42-2266
Frost and salt weathering as periglacial processes: the results and implications of some laboratory experiments.
Jerwood, L.C., et al, Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.135-143, 10 refs.
Robinson, D.A., Williams, R.B.G.
Frost weathering, Periglacial processes, Experimentation, Rocks, Freeze thaw cycles, Temperature effects.

42-2267
Periglacial features in the soils of north east Scotland.
Fitzpatrick, E.A., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.153-162, 23 refs.
Periglacial processes, Paleoclimatology, Frost shattering, Solifluction, Slopes, Geomorphology, Rocks, Frost heave, Age determination.

42-2268
Rock platform erosion on periglacial shores: a modern analogue for Pleistocene rock platforms in Britain.
Dawson, A.G., et al, Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.173-182.
Matthews, J.A., Shakesby, R.A.
Periglacial processes, Rocks, Shores, Frost shattering, Lacustrine deposits, Erosion, Pleistocene.

42-2269
Ramparted ground ice depressions in Britain and Ireland.
Bryant, R.H., et al, Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.183-190, 32 refs.
Carpenter, C.P.
Ground ice, Geomorphology, Paleoclimatology, Periglacial processes, Glaciation, Sediments, Distribution, Age determination.

42-2270
Distribution and age of pingo remnants in Ireland.
Coxon, P., et al, Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.195-202, 32 refs.
O'Callaghan, P.
Pingos, Periglacial processes, Paleoclimatology, Distribution, Age determination, Landscape types.

42-2271
Role of thermokarst in landscape development in eastern England.
Burton, R.G.O., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.203-208, 28 refs.
Thermokarst, Landscape development, Paleoclimatology, Ground ice, Ice wedges, Hydrology, Geology.

42-2272
Significance of periglacial features on Knocknadobar, south west Ireland.
Quinn, I.M., Periglacial processes and landforms in Britain and Ireland. Edited by J. Boardman, Cambridge, University Press, 1987, p.287-294, 36 refs.
Periglacial processes, Landforms, Paleoclimatology, Landscape types, Temperature effects.

42-2273
Satellite information for surface water research. [Sputnikovaia informatsiia i izuchenie vod sushi],
Kupriianov, V.V., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy,* 1976, Vol.238, 144p., In Russian with abridged English table of contents enclosed. 164 refs.
Prokacheva, V.G.
Remote sensing, Hydrology, Runoff, Ice conditions, Water reserves, Models, Floods, Precipitation (meteorology).

42-2274
Ways of increasing the efficiency of working equipment designed for the North. [Metody povysheniia rabotosposobnosti tekhniki v severnom ispolnenii],
Grigor'ev, R.S., et al, Novosibirsk, Nauka, 1987, 252p., In Russian with abridged English table of contents enclosed. 277 refs.
Larionov, V.P., Urzhumtsev, IU.S.
Engineering, Mining, Equipment, Construction equipment, Climatic factors, Steels, Construction materials, Frost action, Brittleness, Mechanical tests, Low temperature tests, Subpolar regions.

42-2275
Relation of placer gold to the autochthonous deposits in the cryolithozone. [Sviaz' rossypnoĭ i korennoĭ zolotonosnosti kriolitozony],
Davidenko, N.M., Yakutsk, Institut merzlotovedeniia, 1987, 172p., In Russian with abridged English table of contents enclosed. Refs. p.160-170.
Lithology, Minerals, Gold, Origin, Alluvium, Placer mining, Permafrost.

42-2276
Ice conditions, state of the ice cover and fast ice characteristics in Alasheyev Bight. [Ledovye usloviia, sostoianie ledianogo pokrova i nekotorye kharakteristiki pripaĭnogo l'da v zalive Alasheeva],
Kornilov, N.A., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.18-28, In Russian. 4 refs.
Leont'ev, E.B., Fedotov, V.I.
Ice strength, Fast ice, Ice navigation, Sea ice distribution, Ice composition, Antarctica—Alasheyev Bight.
Results of studies of ice conditions in Alasheyev Bight from Dec. 1974 to Feb. 1976 are presented. Tabulated data includes the following: water temperature, under the ice and at different distances from the shore, for Jan.-Mar. 1975; thickness of one-year-old and 2-years-old fast ice in the coastal zone; ice cover and snow cover thickness for Aug. 21-23, 1975; and monthly salinity values of one-year-old fast ice from Nov. 1975 to Feb. 1976. Illustrations of seasonal stratigraphy and strength of one-year-old ice show it to be at its weakest in the last 10 days of Jan. and the first 10 days of Feb. It is recommended that expedition ships navigate along the western coast of the Tange Promontory and the southern coast of the bay.

42-2277
Influence of liquid phase on strain-strength energy of sea ice. [O vliianii zhidkoĭ fazy na prochnost' i energiiu deformatsii antarkticheskogo morskogo l'da],
Nazintsev, IU.L., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.35-42, In Russian. 10 refs.
Fedotov, V.I.
Sea ice, Liquid phases, Ice strength.
Data on the structure, composition, salinity, temperature and models of ice elasticity, from studies carried out on the research vessel *Mikhail Somov* in 1978-1981, as well as from studies at Molodezhnaya Station in 1971-1976, are examined, and a distinct relation between ice strength and structure, particularly in relation to the liquid phase component, is found.

42-2278
Snow-ice adhesion to ship's hull. [O mekhanizme oblipaniia korpusa sudna],
Vol, A.A., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.42-45, In Russian. 3 refs.
Ionov, B.P., Lednev, V.A.
Ice navigation.
Results of investigations on the effect of snow and ice adhesion on ships' speed, carried out on the *Mikhail Somov* during the 26th and 27th Soviet Antarctic Expedition, are presented. Basic conditions to induce adhesion include: unfavorable air temperature, the presence of ground and finely fractured ice, speed of ship less than 10-12 knots, the presence of snow on the ice surface, significant corrosion of the hull, and absence of protective hull cover. It is also found that adhesion takes place unevenly over different areas of the hull, and that hydrometeorological and geographical conditions do not correlate with the severity and frequency of the adhesion, although its occurrence is more probable in sea water than in fresh water.

42-2279
Studies of mountain lakes in the Unter-See region. [Issledovanie ozer gornogo oazisa Unter-Zee],
Klokov, V.D., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.45-50, In Russian. 1 ref.
Simonov, I.M., Kaup, E.B., Loopmann, A.A.
Lake ice, Ice cover thickness, Lake water, Hydrogeochemistry, Microbiology, Antarctica—Unter-See, Lake.
From Dec. 2 to Dec. 15, 1983, a complex investigation of 2 main lakes within the Unter-See region, in the Wohlthat Mountains, was carried out by bathymetric measurements along several profiles. The ice thickness, the vertical temperature distribution and the concentration of dissolved oxygen were studied. The distribution of the water mineralization and the pH values were measured. Samples were collected for determination of nutrient content and concentrations of main ions, heavy metals and oxygen isotopes (O-18). The distribution of chlorophyll and the primary production of phytoplankton were determined by C-14 measurements. The vertical distribution of photoactive radiation (380-710 nm) was noted. Samples of phytoplankton and phytobenthos were conserved for determination of species distribution. Sediment was sampled for chemical analysis. The morphology of the lakes Unter-See and Ober-See and some chemical and biological data of fresh-water lakes, glaciers and snow of the oasis are presented in tables and figures.

42-2280
Study of long period average accumulation of atmospheric precipitation in the Mirnyy Station area. [Issledovaniia srednemnogoletnei akkumuliatsii atmosfernykh osadkov v raĭone observatorii Mirnyĭ],
Diurgerov, M.B., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.51-57, In Russian. 4 refs.
Korolev, P.A., Manevskiĭ, L.N., Pukhov, V.A.
Ice cores, Snow accumulation, Antarctica—Mirnyy Station.
Results of studies of firn-ice cores from 2 boreholes, carried out in the vicinity of Mirnyy Station during the 26th Soviet Antarctic Expedition in July-Aug. 1981, are discussed. Tables are presented showing respective location and characteristics of the boreholes (47.5 and 50.0 m above sea level, 16.38 and 31.16 m depth, and -8.9 and -8.3 C temperature); 1955-1981 spring-summer net accumulation data; and snow and firn structure.

42-2281
Hydrometeorological regime of the southern ocean in summer 1982-1983. [Gidrometeorologicheskiĭ rezhim IUzhnogo okeana letom 1982-1983],
Pavlov, A.IU., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.80-83, In Russian. 6 refs.
Sea ice distribution, Icebergs, Snowfall.
Results of hydrometeorological investigations, carried out in the low pressure zone at 61-62S by the 28th Soviet Antarctic Expedition during Dec. 1982-Apr. 1983 are given as follows: lowest pressure, 969 mbar; wind speed, 25 m/sec; height of the swell, 7 m. Long period averages for recurrence of basic hydrometeorological characteristics are compared to the expedition's data, which are tabulated and discussed. In considering navigation conditions, it is found that the higher the latitude, the lower the visibility, while precipitation increased from 29% at 40-50S, to 42% at 50-60S and to 50% south of 60S in relation to long-period averages. The highest precipitation ratio was found in the coastal waters of the Pacific sector, where it exceeded 58%. Precipitation in the coastal areas of the continent consists of short snowfalls of 10-20 min. duration. Data on sea ice distribution show the highest concentration of icebergs to occur in the Davis Sea, where they drift at an average speed between 0.4 to 0.9 knots, but sometimes reaching 2 knots.

42-2282
Unusual moraine. [Neobychnaia morena],
Simonov, I.M., *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1987, Vol.109, p.109-111, In Russian.
Lakes, Moraines, Glacial deposits, Antarctica—Unter-See, Lake, Antarctica—Anuchin Glacier.
After a brief description of the location, geography, morphology, dimensions, ice cover features and water characteristics of Lake Unter-See, a moraine found by the 28th and 29th Soviet Antarctic Expeditions in Dec. 1983, located in the southwestern corner of the lake, next to the Anuchin Glacier, is described. The moraine consists of rocks 2-3 m in diameter, unlike those found elsewhere in the lake, and is approximately 300-500 m wide. Discussion centers on the possible processes contributing to the formation of the moraine.

42-2283
Iceberg life expectancies in the Grand Banks and Labrador Sea.
Venkatesh, S., et al, *Cold regions science and technology,* Feb. 1988, 15(1), p.1-11, 13 refs.
El-Tahan, M.
Icebergs, Ice melting, Sea ice distribution, Ice conditions, Ice deterioration, Models, Labrador Sea, Canada—Newfoundland—Grand Banks.

42-2284
Study of the heat transfer process in fresh water at low temperatures.
Dutton, C.R., et al, *Cold regions science and technology,* Feb. 1988, 15(1), p.13-22, 9 refs.
Sharan, A.M.
Ice water interface, Heat transfer, Water temperature, Boundary layer, Flow rate, Ice surface, Air water interactions, Analysis (mathematics), Velocity, Temperature distribution.

42-2285
Measurement of saline ice thickness using a step frequency radar.
Iizuka, K., et al, *Cold regions science and technology,* Feb. 1988, 15(1), p.23-32, 21 refs. For a different source see 41-4511.
Artificial ice, Ice salinity, Ice cover thickness, Radar echoes, Electromagnetic properties, Remote sensing, Experimentation.

42-2286
Formation of slush on floating ice.
Knight, C.A., *Cold regions science and technology,* Feb. 1988, 15(1), p.33-38, 14 refs.
Slush, Snow cover, Floating ice, Ice formation, Surface properties, Flooding.

42-2287
On the determination of the average Young's modulus for a floating ice cover.
Kerr, A.D., et al, *Cold regions science and technology,* Feb. 1988, 15(1), MP 2324, p.39-43, 11 refs.
Haynes, F.D.
Floating ice, Loads (forces), Ice elasticity, Analysis (mathematics), Pressure.
First, the meaning of Young's modulus for a floating ice cover is discussed. A method often used for determining the average modulus of the cover, E(av), consisting of loading an ice cover vertically with a rigid disc, is then presented and a possible shortcoming of the calculation method used is pointed out. It is related to the fact that the contact pressure distribution between disc and ice cover is generally not known. To clarify this issue, a comparative study was conducted to establish the effect of related pressure distributions on the calculated E(av)-value. It was found that the limiting cases—like the uniformly distributed pressure and the uniform line distribution along the disc boundary—yield E(av) that are close to each other. Also, for the range of parameters under consideration, the E(av) obtained using the solution for a concentrated force is close. The paper concludes by showing how the generated graphs may be used to simplify the calculation of E(av) for an ice cover.

42-2288
Implications of salt fingering processes for salt movement in thawed coarse-grained subsea permafrost.
Baker, G.C., et al, *Cold regions science and technology,* Feb. 1988, 15(1), p.45-52, 18 refs.
Osterkamp, T.E.
Subsea permafrost, Ground thawing, Fluid flow, Salinity, Meltwater, Sands, Sediments, Experimentation, Boundary layer, Porosity.

42-2289
Analysis for splitting of ice floes during summer impact.
Bhat, S.U., *Cold regions science and technology,* Feb. 1988, 15(1), p.53-63, 25 refs.
Offshore structures, Fracturing, Ice cracks, Ice breaking, Ice floes, Impact strength, Loads (forces), Ice mechanics.

42-2290
Spray evolution in icing wind tunnels.
Gates, E.M., et al, *Cold regions science and technology,* Feb. 1988, 15(1), p.65-74, 11 refs.
Lam, W., Lozowski, E.P.
Wind tunnels, Icing, Drops (liquids), Ice accretion, Velocity, Models, Temperature effects.

42-2291
Effect of notch depth on the fracture toughness of freshwater ice.
Nixon, W.A., *Cold regions science and technology,* Feb. 1988, 15(1), p.75-78, 10 refs.
Ice strength, Ice crystal structure, Fracturing, Temperature effects, Grain size, Tests.

42-2292
Crack nucleation in polycrystalline ice.
Cole, D.M., *Cold regions science and technology*, Feb. 1988, 15(1), MP 2325, p.79-87, 14 refs.
Ice cracks, Ice crystal structure, Grain size, Crack propagation, Anisotropy, Tests, Models.
This paper examines in detail two likely mechanisms of microcrack formation in polycrystalline ice and pays special attention to the grain size dependencies of each mechanism. Under consideration are the Zener-Stroh dislocation pileup mechanism and an elastic mechanism based on the anisotropy of the ice lattice. Calculations for the pileup mechanism indicate that although the dislocation velocity is relatively low, a critical-sized pileup can form under plausible test conditions. Quantification of the elastic anisotropy mechanism indicates that it operates over approximately the same stress levels as the pileup mechanism and exhibits the same grain size dependency. The results of observations on the microcracking of laboratory-prepared freshwater ice having randomly oriented equiaxed grains are used to test the model predictions. The work gives detailed descriptions of the methods used to quantify each model.

42-2293
Snow mass concentration and precipitation rate.
Koh, G., et al, *Cold regions science and technology*, Feb. 1988, 15(1), MP 2326, p.89-92, 7 refs.
Lacombe, J., Hutt, D.L.
Snow accumulation, Precipitation gages, Snowfall, Measuring instruments, Velocity.

42-2294
Glaciated coasts.
Fitzgerald, D.M., ed, London, Academic Press, 1987, 364p., Refs. passim. For selected papers see 42-2295 through 42-2298.
Rosen, P.S., ed.
DLC GB582.G57
Glacial geology, Geomorphology, Landforms, Sedimentation, Coastal topographic features, Paleoclimatology, Shoreline modification, Beaches, Tectonics, Periglacial processes.

42-2295
Geomorphology of a tectonically active, glaciated coast, South-Central Alaska.
Ward, L.G., et al, Glaciated coasts. Edited by D.M. Fitzgerald and P.S. Rosen, London, Academic Press, Inc., 1987, p.1-31, 30 refs.
Moslow, T.F., Finkelstein, K.
Geomorphology, Glacial deposits, Coastal topographic features, Sedimentation, Tectonics, Shoreline modification, Paleoclimatology, United States—Alaska.

42-2296
Coarse-grained beach sedimentation under paraglacial conditions, Canadian Atlantic coast.
Forbes, D.L., et al, Glaciated coasts. Edited by D.M. Fitzgerald and P.S. Rosen, London, Academic Press, Inc., 1987, p.51-86, Refs. p.82-86.
Taylor, R.B.
Geomorphology, Beaches, Periglacial processes, Coastal topographic features, Glaciation, Paleoclimatology, Canada.

42-2297
Holocene evolution of the South-Central coast of Iceland.
Nummedal, D., et al, Glaciated coasts. Edited by D.M. Fitzgerald and P.S. Rosen, London, Academic Press, Inc., 1987, p.115-150, Refs. p.148-150.
Hine, A.C., Boothroyd, J.C.
Geomorphology, Outwash, Coastal topographic features, Glaciation, Glacial deposits, Climatic changes, Paleoclimatology, Iceland.

42-2298
Controls and zonation of geomorphology along a glaciated coast, Gouldsboro Bay, Maine.
Shipp, R.C., et al, Glaciated coasts. Edited by D.M. Fitzgerald and P.S. Rosen, London, Academic Press, Inc., 1987, p.209-231, Refs. p.229-231.
Staples, S.A., Ward, L.G.
Glacial deposits, Geomorphology, Coastal topographic features, Sedimentation, Glaciation, Beaches, United States—Maine.

42-2299
Correction of precipitation measurements.
ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985, *Zürcher geographische Schriften*, 1986, No.23, 288p., Refs. passim. For selected papers see 42-2300 through 42-2306.
Sevruk, B., ed.
Precipitation gages, Snowfall, Snow water equivalent, Snow accumulation, Accuracy, Meetings, Wind factors, Rain.

42-2300
Correction of winter precipitation data by computed snow accumulation.
Martinec, J., *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.67-71, 11 refs.
Snow accumulation, Snow water equivalent, Snowfall, Snow depth, Precipitation gages, Computer applications, Wind velocity, Accuracy, Winter.

42-2301
Density of new snow and its dependence on air temperature and wind.
Meister, R., *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.73-79, 10 refs.
Snow density, Snowfall, Snow accumulation, Air temperature, Wind velocity, Snow water equivalent, Mountains, Accuracy.

42-2302
Conversion of snowfall depths to water equivalents in the Swiss Alps.
Sevruk, B., *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.81-88, 24 refs.
Snow depth, Snowfall, Snow water equivalent, Measuring instruments, Mountains, Snow samplers, Seasonal variations, Switzerland—Alps.

42-2303
Problems of precipitation measurements for water budget studies in the Highlands of Hessen.
Sokollek, V., *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.89-94, 6 refs.
Precipitation gages, Snow accumulation, Snow water equivalent, Water supply, Wind factors, Rain.

42-2304
Canadian methods for precipitation measurement and correction.
Goodison, B.E., et al, *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.141-145, 12 refs.
Louie, P.Y.T.
Precipitation gages, Snow accumulation, Snowfall, Temperature effects, Rain, Weather stations, Accuracy, Canada.

42-2305
Correction of precipitation measurements: Swiss experience.
Sevruk, B., *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.187-196, 14 refs.
Precipitation gages, Snowfall, Air temperature, Rain, Wind factors, Accuracy, Seasonal variations, Weather stations, Switzerland.

42-2306
Quantitative model for operational point precipitation correction by use of data from standard meteorological stations.
Solantie, R., *Zürcher geographische Schriften*, 1986, No.23, ETH/IAHS/WMO Workshop on the Correction of Precipitation Measurements, Zurich, April 1-3, 1985. Proceedings. Edited by B. Sevruk, p.197-202, 3 refs.
Snowfall, Precipitation gages, Wind factors, Rain, Accuracy, Weather stations, Models, Finland.

42-2307
Laboratory studies of sticking coefficients and heterogeneous reactions important in the antarctic stratosphere.
Leu, M.-T., *Geophysical research letters*, Jan. 1988, 15(1), p.17-20, 16 refs.
Ice water interface, Ice vapor interface, Ice crystal growth.
Laboratory studies of sticking coefficients of H2O, HCl, Cl2 and HNO3 on ice and heterogeneous reactions of ClONO2 with ice or HCl/ice have been performed in a fast flow reactor. A quadrupole mass spectrometer with electron impact ionization was used as a detector. The reaction probability of ClONO2 on ice was 0.06 while HOCl was observed as a sole product in the gas phase. With HCl present in ice, the reaction probability of ClONO2 is greatly enhanced, approaching 0.27 (+0.73, -0.13) while molecular chlorine was the major product in the gas phase. Another reaction product was nitric acid which remained in the solid phase. Since the polar stratospheric clouds contain ice particles or possibly HCl/ice particles on the surface, the present results should be a major factor in producing the observed springtime ozone depletion in the antarctic stratosphere. (Auth. mod.)

42-2308
Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas. [Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ],
Sergeev, E.M., ed, Moscow, Nauka, 1987, 408p., In Russian with abridged English table of contents enclosed. For selected summaries see 42-2309 through 42-2320.
Koff, G.L., ed.
Urban planning, Environmental protection, Buildings, Foundations, Piles, Deformation, Frost heave, Swamps, Land reclamation, Soil stabilization, Organic soils, Peat, Rheology, Permafrost beneath structures, Sporadic permafrost, Continuous permafrost, Permafrost hydrology, Statistical analysis, Maps, Charts.

42-2309
Geotechnical conditions of the Nizhniy Urengoy town area. [Geotekhnicheskie usloviia territorii g. Nizhnego Urengoia],
Karlova, V.P., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.130-131, In Russian.
Ryndina, N.K.
Urban planning, Permafrost transformation, Permafrost beneath structures, Permafrost hydrology, Suprapermafrost ground water, Taliks, Water supply, Buildings, Subpolar regions, Roads.

42-2310
Deformations of buildings and engineering structures in the Arctic settlement of Amderma and their causes. [Deformatsii zdaniĭ i inzhenernykh sooruzheniĭ v arkticheskom poselke Amderma i ikh prichiny],
Labudzinskiĭ, E.I., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.135-136, In Russian.
Brushkov, A.V., Bychkov, S.N.
Shores, Permafrost beneath structures, Frost heave, Houses, Buildings, Foundations, Deformation, Arctic Ocean.

42-2311
Role of the dynamics of engineering-geocryological conditions in man-induced paludification (the Chita-Ingoda trough taken as an example). [Rol' dinamiki inzhenerno-geokriologicheskoĭ obstanovki v tekhnogennom podtoplenii (na primere ob"ektov Chitino-Ingodinskoĭ vpadiny)],
Shesternev, D.M., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.155-156, In Russian.
Pokrovskiĭ, D.S., Tsyganok, V.I.
Permafrost beneath structures, Paludification, Discontinuous permafrost, Hydrothermal processes, Water pollution, Electric power, Industrial buildings.

42-2312
Engineering-geocryological conditions in the East-Siberian economic region. [Inzhenerno-geokriologicheskie usloviia Vostochno-Sibirskogo ekonomicheskogo raĭona],
Aleksandrov, A.S., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.166-167, In Russian.
Shesternev, D.M.
Permafrost distribution, Economic development, Permafrost thickness, Permafrost structure, Industrial buildings, Residential buildings, Environmental protection, Human factors.

42-2313
Evaluation of causes of the development of frost heave processes during seasonal freezing and thawing of rocks, the case of the Leningrad Region. [Otsenka faktorov razvitiia protsessa pucheniia pri sezonnom promerzanii porod (na primere Leningradskoĭ oblasti)],
Chesnokova, I.V., Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.192-193, In Russian.
Soil freezing, Frost action, Frost heave, Seasonal freeze thaw, Fines, Clays, Sands, Peat.

42-2314
Formation of "man-induced" perched water tables on construction sites of western Siberia. [Formirovanie "tekhnogennoĭ" verkhovodki na zastraivaemykh ploshchadiakh Zapadnoĭ Sibiri],
Ablavskiĭ, F.N., Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.194-195, In Russian.
Embankments, Water table, Earth dams, Human factors, Earth fills, Permafrost beneath structures, Sands, Loams, Peat.

42-2315
Systems of urban areas in East Siberia affected by industrial activities. [Tekhnogennye sistemy gorodskikh territoriĭ Vostochnoĭ Sibiri],
Pisarskiĭ, B.I., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.277-278, In Russian.
Dem'ianovich, N.I.
Urban planning, Economic development, Human factors, Industrial buildings, Soil pollution, Water pollution, Environmental protection.

42-2316
Problems of engineering geology of urban infrastructures related to the West Siberian petroleum complex. [Problemy inzhenernoĭ geologii gorodskikh infrastruktur pri formirovanii zapadno-Sibirskogo neftegazovogo kompleksa],
Puliaev, V.N., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.281-283, In Russian.
Pavlov, S.V.
Urban planning, Petroleum industry, Permafrost distribution, Permafrost beneath structures, Permafrost transformation, Buildings, Foundations, Environmental protection.

42-2317
Principles of compiling models of clayey rocks for forecasting engineering-geological processes at the base of structures. [Printsipy postroeniia modeleĭ glinistykh porod dlia prognoza inzhenerno-geologicheskikh protsessov v osnovanii sooruzheniĭ],
Dashko, R.E., Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.318-319, In Russian.
Clays, Clay soils, Rheology, Clay minerals, Deformation, Mathematical models.

42-2318
Using computers in forecasting thermal regimes of ground in built-up permafrost areas. [Vozmozhnost' EVM dlia prognoza temperaturnogo rezhima gruntov zastroennykh territoriĭ v oblasti vechnoĭ merzloty],
Chekhovskiĭ, A.L., et al, Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.345-346, In Russian.
Rogatina, N.P.
Permafrost distribution, Permafrost beneath structures, Permafrost thermal properties, Soil temperature, Thermal regime, Stefan problem, Computer applications.

42-2319
Using some composition indices of recent flood-plain deposits in predicting settlement of buildings. [Ob ispol'zovanii nekotorykh pokazateleĭ sostava sovremennykh poĭmennykh otlozheniĭ pri prognoze osadok zdaniĭ],
Kozliakova, I.V., Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.361-362, In Russian.
Sediments, Settlement (structural), Urban planning, Industrial buildings, Residential buildings, Foundations, Piles, Floodplains, Clays, Peat.

42-2320
Estimation and forecasts of engineering-geological processes in hydraulically filled earth, for designing residential buildings in the town of Surgut. [Otsenka i prognoz inzhenerno-geologicheskikh protsessov v namyvnykh gruntakh dlia proektirovaniia zhilishchnogo stroitel'stva v g. Surgute],
Kriveniuk, A.N., Sovremennye problemy inzhenernoĭ geologii i gidrogeologii territorii gorodov i gorodskikh aglomeratsiĭ (Current problems in engineering geology and hydrogeology of metropolitan and megalopolitan areas) edited by E.M. Sergeev and G.L. Koff, Moscow, Nauka, 1987, p.365-367, In Russian.
Swamps, Residential buildings, Land reclamation, Hydrothermal processes, Foundations, Soil stabilization, Concrete structures, Permafrost beneath structures, Sporadic permafrost, Organic soils, Peat, Subpolar regions.

42-2321
Geocryological predictions for construction in new territories. [Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ],
Baulin, V.V., ed, Moscow, Nauka, 1987, 104p., In Russian. For individual papers see 42-2322 through 42-2335. Refs. passim.
Permafrost distribution, Mapping, Economic development, Permafrost beneath structures, Permafrost control, Permafrost physics, Permafrost transformation, Forecasting.

42-2322
Problems, methods and stages of geocryological forecasting. [Zadachi, metody i etapy geokriologicheskogo prognozirovaniia],
Ershov, E.D., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.4-10, In Russian. 5 refs.
Garagulia, L.S., Maksimova, L.N.
Economic development, Surveys, Permafrost distribution, Construction, Permafrost physics, Permafrost thermal properties, Foundations, Buildings, Earthwork, Forecasting, Permafrost transformation.

42-2323
Geocryological forecasts and the protection of geological environment. [Geokriologicheskiĭ prognoz i okhrana geologicheskoĭ sredy],
Ershov, E.D., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.11-15, In Russian.
Chizhov, A.B.
Geocryology, Permafrost forecasting, Environmental protection.

42-2324
Structure of geological media as object of geocryological forecasting. [Struktura geologicheskoĭ sredy kak ob"ekt geokriologicheskogo prognoza],
Mel'nikov, E.S., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.16-24, In Russian. 5 refs.
Goral'chuk, M.I.
Permafrost forecasting, Geologic structures, Permafrost physics, Permafrost thermal properties.

42-2325
Evaluation of man-induced changes in geocryological conditions. Maps for forecasting and evaluations. [Printsipy otsenki tekhnogennykh izmeneniĭ geokriologicheskikh usloviĭ. Prognoznye i otsenochnye karty],
Garagulia, L.S., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.25-33, In Russian.
Kondrat'eva, K.A., Parmuzin, S.IU., Romanovskiĭ, N.N.
Permafrost transformation, Human factors, Economic development, Mapping.

42-2326
Experience and problems of studying cryogenic physical and chemical processes in research stations. [Opyt i problemy statsionarnogo izucheniia kriogennykh fiziko-geologicheskikh protsessov],
Chistotinov, L.A., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.33-37, In Russian.
Shur, IU.L., Cherniad'ev, V.P.
Permafrost, Hydrothermal processes, Geocryology, Research projects.

42-2327
Methods of forecasting thermal state of the ground. [Metodika prognoza teplovogo sostoianiia gruntov],
Cherniad'ev, V.P., Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.37-46, In Russian. 4 refs.
Frozen ground temperature, Freeze thaw cycles, Frost penetration, Stefan problem, Forecasting.

42-2328
Mathematical modeling of thermal processes for geocryological forecasting. [Matematicheskoe modelirovanie teplovykh protsessov pri geokriologicheskom prognoze],
Minkin, M.A., Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.46-57, In Russian. 9 refs.
Soil freezing, Hydrothermal processes, Forecasting, Mathematical models.

42-2329
Improving the accuracy of estimating the stability of foundations of buildings and structures on thawing ground. [Puti povysheniia dostovernosti prognoza ustoichivosti osnovaniĭ zdaniĭ i sooruzheniĭ na ottaivaiushchikh gruntakh],
Ponomarev, V.D., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.58-63, In Russian.
Sorokin, V.A., Fedoseev, IU.G.
Active layer, Foundations, Permafrost beneath structures, Permafrost structure, Ground ice, Freeze thaw cycles.

42-2330
Formation of bearing ground temperatures beneath buildings and structures of Yakutsk City. [Formirovanie temperatury gruntov osnovaniĭ pod zdaniiami i sooruzheniiami g. IAkutska],
Pavlov, A.V., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.63-70, In Russian. 9 refs.
Korkina, S.IU., Roman, L.T.
Permafrost beneath structures, Continuous permafrost, Active layer, Soil temperature, Snow cover effect, Wind factors.

42-2331
Analyzing the experience of building and operating apartment houses erected on permafrost in the Vorkuta industrial district. [Analiz opyta stroitel'stva i ekspluatatsii zhilykh domov vozvedennykh na mnogoletnemerzlykh gruntakh v vorkutinskom promyshlennom raĭone],
Belotserkovskaia, G.V., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.71-78, In Russian.
Ponomarev, V.D.
Permafrost beneath structures, Residential buildings, Foundations, Deformation.

42-2332
Nature of frozen ground compressibility. ¡Priroda kompressionnoĭ szhimaemosti merzlykh gruntov¡,
Ershov, E.D., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.78-84, In Russian. 4 refs.
Permafrost physics, Frozen ground strength, Compressive properties, Sands, Frost penetration, Unfrozen water content, Clays.

42-2333
Forecasting ground temperature, at depth, around a cylindrical model. ¡Prognozirovanie temperatury mnogoletnemerzlogo grunta na glubine vokrug modeli tsilindricheskoĭ formy¡,
Kaverina, T.V., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.85-89, In Russian. 3 refs.
IAnitskiĭ, P.A., Danielian, IU.S.
Permafrost thermal properties, Frozen ground temperature, Soil air interface, Heat transfer, Air temperature, Seasonal variations, Mathematical models.

42-2334
Influence of the rigidity of structures above the foundations, on buckling of tapered piles. ¡Vliianie zhestkosti nadfundamentnykh konstruktsiĭ na vypuchivanie piramidal'nykh svaĭ¡,
Shishkin, V.IA., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.90-94, In Russian. 1 ref.
Sazhin, V.S., Zekin, V.N.
Experimentation, Permafrost beneath structures, Pile structures, Frost heave, Deformation, Design.

42-2335
Numerical analysis of the ice accretion process on thermopile surfaces. ¡Chislennoe issledovanie protsessa namorazhivaniia l'da na poverkhnosti termosvaĭ¡,
Danielian, IU.S., et al, Geokriologicheskiĭ prognoz pri stroitel'nom osvoenii territoriĭ (Geocryological predictions for construction in new territories) edited by V.V. Baulin, Moscow, Nauka, 1987, p.95-100, In Russian. 7 refs.
IAnitskiĭ, P.A.
Mathematical models, Permafrost control, Thermopiles, Icing, Ice cover thickness, Hydrothermal processes.

42-2336
Report on sea trials with the Soviet icebreaker "Mudyug".
Hoogen, N., et al, *Marine technology*, 1987, 18(4), p.125-129, With German summary. 3 refs.
Delius, K.
Icebreakers, Ice breaking, Ice loads, Ice conditions, Design, Pressure ridges, Ice navigation.

42-2337
Annual carbon dioxide cycle in a montane soil: observations, modeling, and implications for weathering.
Solomon, D.K., et al, *Weather resources research*, Dec. 1987, 23(12), p.2257-2265, 25 refs.
Cerling, T.E.
Snow composition, Soil chemistry, Weathering, Carbon dioxide, Soil temperature, Snow temperature, Mountains, Ground water, Snowmelt, Models.

42-2338
Freezing and thawing of soils and permafrost containing unfrozen water or brine.
Osterkamp, T.E., *Water resources research*, Dec. 1987, 23(12), p.2279-2285, 31 refs.
Permafrost thermal properties, Phase transformations, Unfrozen water content, Soil freezing, Ground thawing, Brines, Latent heat, Temperature effects, Heat transfer, Analysis (mathematics).

42-2339
Freezing of saturated and superheated liquid in porous media.
Cheilaiah, S., et al, *International journal of heat and mass transfer*, Feb. 1988, 31(2), p.321-330, With French, German and Russian summaries. 25 refs.
Viskanta, R.
Freezing rate, Liquids, Heat transfer, Saturation, Porosity, Temperature effects, Tests, Density (mass/volume).

42-2340
Experimental study of natural convection effects on downward freezing of pure water.
Brewster, R.A., et al, *International journal of heat and mass transfer*, Feb. 1988, 31(2), p.331-348, With French, German and Russian summaries. 15 refs.
Gebhart, B.
Freezing rate, Water, Heat transfer, Convection, Ice formation, Supercooling, Temperature effects, Flow rate, Experimentation.

42-2341
Graphite-nitrogen suspensions with selected herbicides applied to snow in management of winter wheat.
Tindall, T.A., et al, *Soil science*, Sep. 1987, 144(3), p.218-223, 10 refs.
Dewey, S.A.
Dusting, Snow melting, Melting points, Snow cover effect, Protection, Agriculture.

42-2342
Workshop on the U.S. Antarctic Meteorological Data Delivery System.
Hanson, C.S., ed, *World Data Center A for Glaciology. Glaciological Data. Report*, Jan. 1988, GD-20, 76p., 8 refs. Includes comments by P. Dalrymple, D. Bromwich, W. Smythe, and G. Scharfen.
Spears, C.R., ed.
Weather stations, Weather observations, Data processing, Data transmission.
Concerns over access to meteorological data from U.S. antarctic stations have been the subject of much discussion among organizations closely involved in weather matters. Several factors have apparently led to a somewhat confused picture of data access in the minds of potential data users: delays in data receipt both at the ultimate archive(s) and at transmission stations along the route to the archive(s); non-standardized reporting methods and formats; no permanent archive for the data in question; no permanent source of funding to process and archive the data; and archive locations not widely known within the research community. This workshop was convened to address these problems. To that end, participants examined antarctic data inventories from the National Climatic Data Center, National Center for Atmospheric Research, Naval Postgraduate School, Comprehensive Ocean-Atmosphere Data Set, U.S. Interim Climate Data Inventory, and the National Snow and Ice Data Center. About 25 recommendations emerged from the conference and these urged all interested parties to increase the antarctic meteorological measurement capability, gather more data through wider and better use of current technology, subject the data to rigid quality control processes, communicate the results to using agencies and archives, and let researchers and other users know who has what and how to gain access to it.

42-2343
Glaciology and paleoglaciology of the Cherskiy mountain system and the adjacent area in the northeastern USSR. ¡Gliatsiologiia i paleogliatsiologiia gornoĭ sistemy Cherskogo i sopredel'nykh raĭonov Severo-Vostoka SSSR¡,
Sheĭnkman, V.S., Moscow, Mezhduvedomstvennyĭ geofizicheskiĭ komitet pri prezidiume Akademii nauk SSSR. Rezul'taty issledovaniĭ po mezhdunarodnym geofizicheskim proektam (Academy of Sciences of the USSR. Soviet Geophysical Committee. Results of researches on the international geophysical projects) edited by B.I. Vtiurin, Moscow, 1987, 154p., In Russian with English table of contents enclosed. 167 refs.
Glaciology, Ice dating, Permafrost, Pleistocene, Ice formation, Mountain glaciers, Glacier ice, Glacier flow, Naleds, Glacial deposits, Moraines, Ground ice, Climatic factors.

42-2344
Allowing for the peculiarities of plating wearout, revealed by flow detection, on iceworthy ships. ¡Uchet osobennosteĭ iznosa obshivki sudov ledovogo plavaniia pri defektatsii¡,
Briker, A.S., Prochnost' sudov i zashchita sudovykh konstruktsiĭ ot korrozii i obrastaniia (Strength of ships and protection of their structures from corrosion and sea-crust) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.66-70, In Russian. 3 refs.
Ice loads, Ice navigation, Ships, Plates, Metals, Metal ice friction, Deformation.

42-2345
Design temperatures of hull-structures of icebreaking-carrying vessels. ¡Raschetnye temperatury korpusnykh konstruktsiĭ ledokol'no-transportnykh sudov¡,
Efimets, V.A., Prochnost' sudov i zashchita sudovykh konstruktsiĭ ot korrozii i obrastaniia (Strength of ships and protection of their structures from corrosion and sea-crust) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.75-81, In Russian. 4 refs.
Ships, Ice navigation, Icebreakers, Cargo, Marine transportation.

42-2346
New types of spherules from Antarctica: meteoritic impact origin?.
Tazawa, Y., et al, *Geophysical research letters*, Dec. 1987, 14(12), p.1199-1202, 20 refs.
Fujii, Y.
Ice composition, Cosmic dust, Snow composition, Antarctica—Mizuho Station, Antarctica—Allan Hills.
Spherules collected from antarctic ice have been studied by using instrumental neutron activation analysis, energy dispersive X-ray spectrometry and X-ray diffraction photography. Peculiar spherules, Ca-Ti-rich (perovskite) type (CTS) and Fe-Cr-Ni-rich type (FCN), were found in the Mizuho ice core at depths of 32 to 33.5 m. Both types have rare earth element (REE) abundances. In the Allan Hills bare ice, only a "chondritic" type without depletion of Au and S (CAS) was recognized. Size distributions and influx rates of spherules for these ices and the Mizuho surface snow indicate that antarctic spherules are composed of steady-falling and occasional populations. All the results combine to suggest that CTS and FCN may be droplets strewn by the impact of a huge meteorite, and CAS must be debris from one of the chondrites that fell on the source region of the Allan Hills bare ice and survived terrestrial alterations. (Auth. mod.)

42-2347
Effects of surface roughness and porosity on the riming of snowflakes.
Matsuo, T., *Meteorological Society of Japan. Journal*, Aug. 1987, 65(4), p.635-647, With Japanese summary. 14 refs.
Snowflakes, Surface roughness, Porosity.

42-2348
Ice-albedo feedback in a CO2-doubling situation.
Dickinson, R.E., et al, *Climatic change*, July 1987, 10(3), p.241-248, 8 refs.
Meehl, G.A., Washington, W.M.
Sea ice, Albedo, Air temperature, Atmospheric circulation, Models.
The feedback of sea-ice change to the warming from CO2-doubling is estimated using the simulation of Washington and Meehl (1984). Without ice-snow albedo feedback, their global warming of 3.5 C would have been 2.2 C according to the present estimate of the ice-snow feedback. About 80% of the albedo change from ice and snow occurred in the Southern Hemisphere. Whether this change was an overestimate will require further study. (Auth.)

42-2349
Glacier surge at Usherbreen, Svalbard.
Hagen, J.O., *Polar research*, Dec. 1987, 5(2), p.239-252, 14 refs.
Glacier surges, Ice volume, Norway—Svalbard.

42-2350
Glacier mass balance investigations in the balance years 1984-5 and 1985-6.
Hagen, J.O., et al, *Polar research*, Dec. 1987, 5(2), p.261-265.
Liestöl, O.
Glacier mass balance, Norway.

42-2351
Optimizing heat supply systems of settlements in Yakutia. ¡Optimizatsiia sistem teplosnabzheniia poselkov IAkutii¡,
Kapitonov, V.N., et al, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1987, 88p., In Russian with abridged English table of contents enclosed. 144 refs.
Kolodeznikov, R.P., Shadrin, A.P.
Electric power, Permafrost beneath structures, Heating, Nuclear power, Fuels, Natural gas, Electric heating, Residential buildings, Houses.

42-2352
Stranded at the North Pole: a chilling adventure.
Evans, J.L., *Naval aviation news*, Mar./Apr. 1988, 70(3), p.18-21.
Cold weather survival, Rescue operations, North Pole.

42-2353
Icebreaking theory development by segmented model tests: refinement of technique, Vols. 1 and 2.
Godon, A., et al, *Transport Canada. Report*, Mar. 1987, TP 8498E, 2 vols., Vol. 2 contains appendices. 4 refs.
Nawwar, A.
Ice breaking, Ice strength, Ice loads, Ice friction, Ice cover thickness, Models, Tests, Ice pressure.

42-2354
Evaluation of the frost resistance of roller-compacted concrete pavement.
Ragan, S.A., *Transportation research record*, 1986, No.1062, p.25-32, 6 refs.
Concrete durability, Pavements, Frost resistance, Freeze thaw cycles, Flexural strength, Compressive properties, Tests, Compaction.

42-2355
Effects of superplasticizers on the engineering properties of plain concrete.
Park, S.B., et al, *Transportation research record,* 1986, No.1062, p.38-46, 13 refs.
Tia, M.
Concrete durability, Concrete aggregates, Freeze thaw cycles, Concrete strength, Flexural strength, Air entrainment, Tests.

42-2356
Effect of AC overlays on D-cracking in PCC pavements.
Janssen, D.J., et al, *Transportation research record,* 1986, No.1062, p.70-75, 15 refs.
Dempsey, B.J.
Pavements, Concrete durability, Crack propagation, Freeze thaw cycles, Concrete aggregates, Water content, Damage, Tensile properties, Tests.

42-2357
Using soil temperatures to monitor thermosyphon performance.
McFadden, T., *Journal of cold regions engineering,* Dec. 1987, 1(4), p.145-157, 3 refs.
Cooling systems, Soil temperature.

42-2358
Geosynthetics supporting embankments over voids.
Kinney, T.C., et al, *Journal of cold regions engineering,* Dec. 1987, 1(4), p.158-170, 15 refs.
Connor, B.
Construction materials, Pavement bases, Embankments.

42-2359
Sublimation of pore ice in frozen silt.
Huang, S.L., et al, *Journal of cold regions engineering,* Dec. 1987, 1(4), p.171-181, 8 refs.
Aughenbaugh, N.B.
Ice sublimation, Dust control, Excavation, Mining.

42-2360
Statistics on charge exchange and charge generation during single collisions of ice particles.
Stow, C.D., et al, *Philosophical magazine A,* Dec. 1987, 56(6), p.783-797, 12 refs.
Turner, G.J.
Electric charge, Cloud electrification, Ice crystals.

42-2361
Tidal currents and glacial discharge, Laguna San Rafael, southern Chile.
Reed, D.J., *Journal of coastal research,* Winter 1988, 4(1), p.93-102, With French and Spanish summaries. 11 refs.
Tidal currents, Glacial hydrology, Meltwater, Chile—Laguna San Rafael.

42-2362
Winter ice in 1986/87 in the German coastal region between the Ems and Trave rivers. [Der Eiswinter 1986/87 im deutschen Küstengebiet zwischen Ems und Trave].
Koslowski, G., *Deutsche hydrographische Zeitschrift,* 1987, 40(3), p.115-123, 4 refs.
Ice conditions, Winter, Weather.

42-2363
Arctic ambient noise in the Beaufort Sea: seasonal relationships to sea kinematics.
Lewis, J.K., et al, *Acoustical Society of America. Journal,* Feb. 1988, 83(2), p.549-565, 14 refs.
Denner, W.W.
Subglacial observations, Ice acoustics, Underwater acoustics.

42-2364
Interpretation of a few ice event transients.
Stein, P.J., *Acoustical Society of America. Journal,* Feb. 1988, 83(2), p.617-622, 6 refs.
Subglacial observations, Ice acoustics, Underwater acoustics.

42-2365
Micromorphology of taiga soils. [Mikromorfologiia taezhnykh pochv].
Rusanova, G.V., Leningrad, Nauka, 1987, 149p., In Russian with English table of contents enclosed. Refs. p.142-148.
Forest soils, Taiga, Cryogenic soils, Podsol, Soil formation, Soil composition, Soil chemistry.

42-2366
Hydrogeology and engineering geology of the Kirghiz SSR. [Gidrogeologiia i inzhenernaia geologiia Kirgizskoĭ SSR].
Kashirin, F.T., ed, Frunze, Ilim, 1985, 223p., In Russian. For selected papers see 42-2367 through 42-2369. Refs. passim.
Talipov, M.A., ed.
Alpine landscapes, Engineering geology, Mountain glaciers, Nivation, Permafrost distribution, Glacial deposits, Moraines, Loess, Permafrost structure, Frozen fines, Thixotropy, Earthquakes.

42-2367
Regional characteristics of engineering-geological conditions in the eastern part of Kirghizia. [Regional'nye osobennosti inzhenerno-geologicheskikh uslovii vostochnoĭ chasti territorii Kirgizskoĭ SSR].
Talipov, M.A., Gidrogeologiia i inzhenernaia geologiia Kirgizskoĭ SSR (Hydrogeology and engineering geology of the Kirghiz SSR) edited by F.T. Kashirin and M.A. Talipov, Frunze, Ilim, 1985, p.3-12, In Russian. 13 refs.
Engineering geology, Mountain glaciers, Nivation, Permafrost distribution, Glacial deposits, Moraines, Alpine landscapes.

42-2368
Space-time conditions of formation of sagging characteristics of loess in the Chuyskaya trough of northern Tien Shan. [Issledovanie prostranstvenno-vremennykh uslovii formirovaniia prosadochnosti lessovykh porod Chuĭskoĭ vpadiny Severnogo Tian'-Shania].
Usupaev, Sh.E., Gidrogeologiia i inzhenernaia geologiia Kirgizskoĭ SSR (Hydrogeology and engineering geology of the Kirghiz SSR) edited by F.T. Kashirin and M.A. Talipov, Frunze, Ilim, 1985, p.33-39, In Russian. 8 refs.
Loess, Climatic changes, Permafrost distribution, Permafrost structure, Origin.

42-2369
Factors influencing the time of thixotropy and hardening of water-saturated [illegible]ils. [Faktory vliiaiushchie na vremia razuprochneniia i uprochneniia vodonasyshchennykh dispersnykh gruntov],
Kozhobaev, K.A., Gidrogeologiia i inzhenernaia geologiia Kirgizskoĭ SSR (Hydrogeology and engineering geology of the Kirghiz SSR) edited by F.T. Kashirin and M.A. Talipov, Frunze, Ilim, 1985, p.59-65, In Russian. 13 refs.
Loams, Clay soils, Fines, Sands, Thixotropy, Deformation, Earthquakes.

42-2370
Movement of Halley, derived from SATNAV measurements 1986-1987.
Simmons, D.A., et al, *British Antarctic Survey. Bulletin,* Feb. 1988, 78, p.55-57, 3 refs.
Lurcock, P.M.
Ice shelves, Drift, Ice navigation, Aerial surveys, Antarctica—Brunt Ice Shelf, Antarctica—Halley Station.
Recent estimates of the velocity of the Brunt Ice Shelf have been based on fixing the position of the BAS station Halley, on shipborne observation of the ice front, and on comparison of features seen on Landsat images taken some 12 years apart. In Jan. 1986 a simple satellite navigation (satnav) receiver was installed at Halley and since then has been used to give regular 'position fixes'. These indicate that the velocity of 740 m per annum found for the period 1972-1982 has been maintained in the period Jan. 1986 to July 1987. (Auth.)

42-2371
Observations and model calculations of aerodynamic drag on sea ice in the Fram Strait.
Hanssen-Bauer, I., et al, *Tellus,* Mar. 1988, 40A(2), p.151-161, 16 refs.
Gjessing, Y.T.
Sea ice, Wind (meteorology), Ice friction, Fram Strait.

42-2372
Winter cities forum '86: Symposium proceedings.
International Winter Cities Symposium, 1st, Edmonton, Alberta, Feb. 15-19, 1986, Edmonton, Alta., 1986, 267p., Refs. passim. For selected papers see 42-2373 through 42-2375.
Smith, M., ed, Martin, D.K., ed.
Buildings, Thermal insulation, Road maintenance, Winter maintenance, Ice removal, Snow removal, Ice control, Meetings.

42-2373
Sapporo's snow removal system.
Saito, S., International Winter Cities Symposium, 1st, Edmonton, Alberta, Feb. 15-19, 1986. Winter cities forum '86: Symposium proceedings. Edited by M. Smith and D.K. Martin, Edmonton, Alta., 1986, p.231-232.
Snow removal, Road maintenance, Equipment, Winter maintenance, Snowfall, Forecasting.

42-2374
Snow and ice control program in the city of St. Albert.
Corrigan, D., International Winter Cities Symposium, 1st, Edmonton, Alberta, Feb. 15-19, 1986. Winter cities forum '86: Symposium proceedings. Edited by M. Smith and D.K. Martin, Edmonton, Alta., 1986, p.233-249.
Snow removal, Ice removal, Equipment, Ice control, Sanding, Salting, Winter maintenance, Road maintenance.

42-2375
Winter in Edmonton: a hindrance to traffic; a detriment to the environment.
Maurer, A., International Winter Cities Symposium, 1st, Edmonton, Alberta, Feb. 15-19, 1986. Winter cities forum '86: Symposium proceedings. Edited by M. Smith and D.K. Martin, Edmonton, Alta., 1986, p.250-256.
Road maintenance, Ice control, Winter maintenance, Snow removal, Ice removal, Salting, Sanding, Safety, Air temperature, Snowfall.

42-2376
Water quality simulations for tailings ponds in cold regions.
Fällman, A.-M., *Luleå, Sweden. University. Water Resources Engineering.* [Publication.] *Series A,* 1988, No.167, 63p., 20 refs.
Tailings, Water pollution, Ponds, Decomposition, Mass balance, Climatic factors, Snowmelt, Runoff, Sweden.

42-2377
Development of a method for estimating ship performance capabilities and identifying limiting conditions when transiting ice ridges.
Stubbs, J.T., et al, *Transport Canada. Report,* May 1987, TP 8275E, 81p. + appends., 62 refs.
Wiefelspuett, R., Gordon, S., Fowlis, J.
Ice navigation, Ice breaking, Pressure ridges, Ice mechanics, Ice strength, Mathematical models, Ice cover thickness, Ice friction, Tests.

42-2378
Soviet Arctic shipping (From Design to Operation).
Tertyshny, A., Falls Church, VA, Delphic Associates, Inc., 1987, 81p., 67 refs.
Ships, Design, Ice navigation, Icebreakers, Classifications, Arctic Ocean.

42-2379
Spectral and energy characteristics of hail.
Tlisov, M.I., et al, *Soviet meteorology and hydrology,* 1987, No.9, p.43-47, Translated from Meteorologiia i gidrologiia. 5 refs.
Khuchunaev, B.M.
Ice formation, Hailstone growth, Hailstone electrification, Hail clouds, Storms.

42-2380
Ice fracturing at contact interactions.
Epifanov, V.P., *Mechanics of solids,* 1986, 21(6), p.171-179, Translated from Akademiia nauk SSSR. Izvestiia. Mekhanika tverdogo tela. 32 refs.
Models, Ice hardness, Impact strength, Fracturing, Metal ice friction, Stresses, Distribution.

42-2381
Critical conditions for instability of an aqueous film on the surface of a stationary charged melting hailstone in an external electric field.
Grigor'ev, A.I., et al, *Fluid dynamics,* Jan.-Feb. 1987 (Pub. July 87), 22(1), p.7-11, Translated from Akademiia nauk SSSR, Mekhanika zhidkosti i gaza. 13 refs.
Doroshenko, D.N.
Thunderstorms, Hailstones, Ice melting, Electric charge, Charge transfer, Electric corona.

42-2382
Creep of an ice coating lying upon a hydraulic foundation under the action of a concentrated force.
Aleksandrov, V.M., et al, *Journal of applied mechanics and technical physics,* May-June 1987 (Pub. Nov. 87), 28(3), p.457-462, Translated from Zhurnal prikladnoĭ mekhaniki i tekhnicheskoĭ fiziki. 5 refs.
Monosov, L.M., Tsybin, A.M., Shmatkova, A.A.
Ice cover, Plates, Ice creep, Ice deformation, Mathematical models, Stresses, Strains, Ice physics.

42-2383
Experience in chemical stabilization of loess soils at the base of bored injection piles.
Badeev, S.IU., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1987 (Pub. Sep. 87), 24(2), p.72-75, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 4 refs.
Soshin, M.V., Kuzin, B.N., Isaev, B.N.
Soil stabilization, Loess, Cements, Piles.

42-2384
Application of reliability theory to the computation of beds during construction using the method of permafrost stabilization.
Khrustalev, L.N., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1987 (Pub. Sep. 87), 24(2), p.76-82, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 6 refs.
Nikiforov, V.V.
Buildings, Ventilation, Foundations, Active layer, Permafrost beneath structures, Permafrost control, Permafrost bases, Basements.

42-2385
Cell for low-temperature measurements on the acoustic parameters of crystals.
Antiukhov, A.M., et al, *Instruments and experimental techniques*, May-June 1987 (Pub. Dec. 87), 30(3, pt.2), p.750-751, Translated from Pribory i tekhnika eksperimenta.
Kutukov, V.I.
Low temperature research, Crystals, Acoustic measurement, Ultrasonic tests.

42-2386
Melting of pore ice with the formation of an extended isothermal zone.
Medvedskiĭ, R.I., *Journal of engineering physics*, May 1987 (Pub. Nov. 87), 52(5), p.525-529, Translated from Inzhenerno-fizicheskiĭ zhurnal. 5 refs.
Porous materials, Ice formation, Ice melting, Phase transformations, Stefan problem.

42-2387
Gas hydrates in the oceans.
Panaev, V.A., *International geology review*, May 1987, Vol.29, p.596-602, Translated from Biulleten' Moskovskogo obshchestva ispytatelei prirody, ot. geologicheskoe, 1987, Vol.62, No.3, p.66-72. 16 refs.
Natural gas, Hydrates, Clathrates, Ocean bottom, Bottom sediment.

42-2388
Was there ice in the Arctic basin during the last glaciation maximum. [Byl li led v Arkticheskom basseine v period maksimuma poslednego oledeneniia],
Kagan, B.A., et al, *Akademiia nauk SSSR. Doklady*, 1987, 296(6), p.1469-1472, In Russian. 14 refs.
Riabchenko, V.A., Safral, A.S.
Sea ice distribution, Ice conditions, Climatic changes, Planetary environments, Albedo, Water temperature, Air water interactions, Arctic Ocean.

42-2389
Radiocarbon age of the Alpine mountain-meadow soils in northwestern Caucasus. [Radiouglerodnyĭ vozrast gorno-lugovykh al'pĭskikh pochv Severo-Zapadnogo Kavkaza],
Grishina, L.A., et al, *Akademiia nauk SSSR. Doklady*, Sep.-Oct. 1987, Vol.296, p.218-220, In Russian. 6 refs.
Cherkinskiĭ, A.E., Zhakova, O.E., Onipchenko, V.G.
Cryogenic soils, Alpine landscapes, Soil formation, Deserts, Meadow soils, Radioactive age determination.

42-2390
Proposed terminology and reporting units for sea ice algal assemblages.
Horner, R.A., et al, *Polar biology*, 1988, 8(4), p.249-253, Refs. p.252-253.
Syvertsen, E.E., Thomas, D.P., Lange, C.
Sea ice, Algae, Terminology.
Many terms and units are used to describe the algae associated with sea ice. Most of these terms are open to misinterpretation and have been frequently misused. The use of a number of different units when reporting on experimental studies makes it difficult, if not impossible, to compare studies done by different investigators. In an attempt to avoid these ambiguities and to make comparisons easier, some standard terms and reporting units that should be used when discussing ice algal assemblages are suggested. (Auth.)

42-2391
Sea ice microbial communities (SIMCO). 9. Effects of temperature and salinity on rates of metabolism and growth of autotrophs and heterotrophs.
Kottmeier, S.T., et al, *Polar biology*, 1988, 8(4), p.293-304, Refs. p.302-304.
Sullivan, C.W.
Microbiology, Ice salinity, Ice temperature, Algae, Sea ice, Antarctica—McMurdo Sound.
Sea ice microbial communities (SIMCO) grow luxuriantly within several microhabitats of sea ice, indicating that the microorganisms comprising these communities are well adapted to the physicochemical gradients which characterize sea ice. SIMCO, obtained from the bottom of congelation ice in McMurdo Sound, were used to test the hypothesis that low temperature limits microbial productivity in polar oceans and also to investigate the effect of salinity on rates of autotrophic and heterotrophic metabolism. Substantial rates of carbon fixation, incorporation of thymidine, and uptake of glutamate occurred at the *in situ* temperatures of -1.9 C, with maximum rates at temperatures considerably warmer but below 15 C. Microalgae and bacteria of SIMCO are thus indicated to be psychrophiles. Data suggest that a recent hypothesis proposing the uncoupling of primary production and bacterial production in cold water, due to differential growth of phytoplankton and bacterioplankton at low temperatures, is refuted with respect to SIMCO. Maximum rates of carbon fixation by autotrophs of SIMCO occurred at salinities which characterized the ice from which the SIMCO were collected. In contrast, heterotrophs of SIMCO exhibited a more stenohaline response to variable salinity. (Auth. mod.)

42-2392
Forecasting for the frigid desert of Antarctica.
Mullen, D.P., *Weatherwise*, Dec. 1987, 40(6), p.304-311.
Weather forecasting, Antarctica.
A former forecaster with Operation Deep Freeze reflects on the problems and challenges of weather forecasting for flight operations at the terminals and en route within the continent and the N-S route between McMurdo and Christchurch. The lack of weather patterns, reporting stations, radar, and facsimile chart data all emphasize the need for sound individual judgment on the part of the forecaster. A set of 27 forecasting rules has been developed and these, judiciously applied, in conjunction with improving satellite data have removed most of the dart-throwing aspects of weather forecasting in Antarctica.

42-2393
Behaviour and transport of oil under smooth ice.
Puskas, J., et al, *Canadian journal of civil engineering*, Aug. 1987, 14(4), p.510-518, With French summary. 19 refs.
McBean, E., Kouwen, N.
Oil spills, Ice cover effect, Ice bottom surface, Water flow, Mechanical properties, Mathematical models, Boundary layer, Friction.

42-2394
Thermal pressure due to an ice cap in an elevated water tank.
Kong, W.L., et al, *Canadian journal of civil engineering*, Aug. 1987, 14(4), p.519-526, With French summary. 10 refs.
Campbell, T.I.
Ice loads, Thermal properties, Ice pressure, Ice creep, Reinforced concretes, Flexural strength, Mathematical models, Design, Stresses, Temperature variations.

42-2395
Effect of roadway salting on safety and mobility.
Braaksma, J.P., et al, *Canadian journal of civil engineering*, Aug. 1987, 14(4), p.527-533, With French summary. 3 refs.
Ridley, R.C., Jones, P.H.
Road icing, Salting, Snow removal, Ice removal, Safety, Winter maintenance, Road maintenance, Chemical ice prevention, Trafficability, Accidents.

42-2396
Estimates of snowmelt by a heat balance method.
Kondo, J., et al, *Seppyo*, Dec. 1987, 49(4), p.181-191, In Japanese with English summary. 20 refs.
Yamazaki, T.
Snowmelt, Heat balance, Solar radiation, Runoff, Analysis (mathematics).

42-2397
Studies of sea ice in the Okhotsk Sea by numerical model.
Sato, K., *Seppyo*, Dec. 1987, 49(4), p.193-201, In Japanese with English summary. 19 refs.
Sea ice, Ice growth, Ice melting, Ice edge, Ice mechanics, Thermodynamics, Seasonal variations, Mathematical models, Heat transfer, Okhotsk Sea.

42-2398
Control of snowmelt rate with foam cover. Part 1: Field experiment.
Umemura, T., et al, *Seppyo*, Dec. 1987, 49(4), p 203-210, In Japanese with English summary. 6 refs.
Snowmelt, Melting points, Cellular plastics, Thermal insulation, Snow cover, Ablation, Snow deformation, Snow water content, Air entrainment.

42-2399
Light weight snow sampler improved from Kamurotype sampler.
Yoshida, M., et al, *Seppyo*, Dec. 1987, 49(4), p.211-214, In Japanese. 6 refs.
Suzuki, N., Takenaka, S., Ohnuma, T.
Snow samplers, Snow surveys.

42-2400
Sun pillar observed at Nayoro.
Munakata, H., et al, *Seppyo*, Dec. 1987, 49(4), p.215-216, In Japanese. 1 ref.
Sakurai, K.
Snow cover structure, Surface properties, Ice nuclei, Ice fog.

42-2401
Winter maintenance—the season's last step. *Better roads*, Feb. 1988, 58(2), p.36-38.
Winter maintenance, Road maintenance, Equipment, Snow removal, Ice removal.

42-2402
Salt—a guide to regulating its use.
O'Toole, M.L., *Better roads*, Feb. 1988, 58(2), p.41-42.
Winter maintenance, Road maintenance, Ice removal, Salting, Sanding.

42-2403
Salt-resistant sod solves erosion problems. *Better roads*, Feb. 1988, 58(2), p.48.
Road maintenance, Salting, Countermeasures, Grasses.

42-2404
Permafrost hydrology in North America.
Woo, M.-K., *Atmosphere-ocean*, Sep. 1986, 24(3), p.201-234, With French summary. Refs. p.229-234.
Permafrost hydrology, Water flow, Freezeup, Ice breakup, River basins, Water balance.

42-2405
Real-time snow simulation model for the Monongahela River basin.
Hoggan, D.H., et al, *Water resources bulletin*, Dec. 1987, 23(6), p.1141-1147, 7 refs.
Peters, J.C., Loehlein, W.
Reservoirs, Snowmelt, Runoff, Snow accumulation, Forecasting.

42-2406
Estimating peak runoff for small natural catchments in Switzerland. [Abschätzung von Spitzenabflüssen in kleinen natürlichen Einzugsgebieten der Schweiz],
Kölla, E., *Schweizer Ingenieur und Architekt*, 1987, No.33-34, p.965-972, In German. 13 refs.
Flood forecasting, Runoff, River flow, Models.

42-2407
When glaciers suddenly accelerate. [Wenn Gletscher plötzlich schnell werden],
Engelhardt, H., *Geowissenschaften in unserer Zeit*, Nov. 1987, 5(6), p.212-220, In German. 11 refs.
Glacier surges, Glacier flow, Ice cores.

42-2408
Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984.
Conference on Thermal Insulation: Materials and Systems, *American Society for Testing and Materials. Special technical publication*, 1987, No.922, 755p., Refs. passim. For selected papers see 40-2549 and 42-2409 through 42-2416.
Powell, F.J., ed, Matthews, S.L., ed.
Thermal insulation, Heat transfer, Buildings, Thermal conductivity, Meetings, Materials, Heat loss, Cellular plastics.

42-2409
Design criteria for underground insulated piping systems.
Govan, F.A., et al, *American Society for Testing and Materials. Special technical publication*, 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.43-51, 6 refs.
Demetroulis, N.M.
Underground pipelines, Thermal insulation, Protective coatings, Design criteria, Waterproofing, Temperature effects, Maintenance.

42-2410
Foamed-in-place polyurethane foam insulation system design and application for low-temperature storage tanks.
Duff, M.P., *American Society for Testing and Materials. Special technical publication*, 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.69-81, 6 refs.
Cellular plastics, Thermal insulation, Storage tanks, Cold storage, Polymers.

42-2411
Field measurement of the thermal resistance of office buildings.
Fang, J.B., et al, *American Society for Testing and Materials. Special technical publication,* 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.107-123, 5 refs.
Grot, R.A.
Thermal insulation, Walls, Buildings, Heat loss, Thermal conductivity, Tests, Heat flux, Calorimeters, Temperature effects.

42-2412
Measured insulation improvement potential for ten U.S. Army buildings.
Flanders, S.N., *American Society for Testing and Materials. Special technical publication,* 1987, No.922, MP 2327, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.202-220, 6 refs.
Thermal insulation, Buildings, Heat transfer, Military facilities, Convection, Heat flux, Accuracy, Economic analysis, Thermal conductivity.
As-built drawings and handbook calculations of R values are often inadequate bases for investment decisions regarding improved insulation of U.S. Army buildings. Reported field and laboratory experience indicates that a technique employing surface-mounted heat flux sensors (HFSs) in conjunction with infrared thermography (IRT) can yield reliable estimates of R values. This technique employs IRT to position HFSs and thermocouples at representative locations on walls and roofs or attics to acquire heat flow and temperature data for estimating R values. This paper reports on the application of this technique at Ft. Carson, Colorado, and Ft. Richardson, Alaska, to 8 family housing units, a temporary office building, and a barracks. Infrared thermography of these buildings detected few thermal anomalies, but measurement of several walls with HFSs and thermocouples (typically at 6 locations spaced vertically on each wall) revealed significant variation in estimated R values; this variation is attributable to convection, even within fully insulated walls. This is significant for proper placement of sensors and indicates that installed fibrous insulation can lack the ability to quell convection. The insulating ability of walls containing poorly installed mineral fiber batt insulation was much worse than would be indicated by the design handbook values. Some attic insulation performed exactly as expected; some was at least 40% worse than expected.

42-2413
Heat transfer characteristics of a masonry cavity wall.
Van Geem, M.G., *American Society for Testing and Materials. Special technical publication,* 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.318-342, 15 refs.
Heat transfer, Walls, Thermal insulation, Buildings, Thermal conductivity, Masonry, Heat flux, Heat loss, Tests, Temperature effects.

42-2414
Anomalous behavior of water vapor retarders applied to spray-applied polyurethane foam insulation on low-temperature outdoor storage tanks.
Batdorf, V., *American Society for Testing and Materials. Special technical publication,* 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.463-474, 3 refs.
Cold storage, Thermal insulation, Protective coatings, Cellular plastics, Cold weather performance, Vapor diffusion, Water vapor, Temperature effects.

42-2415
Development of experimental data on cellular plastic insulations under simulated winter exposure conditions.
Tye, R.P., et al, *American Society for Testing and Materials. Special technical publication,* 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.518-537, 17 refs.
Baker, C.F.
Cellular plastics, Thermal insulation, Cold weather performance, Thermal conductivity, Moisture, Tests, Cold exposure.

42-2416
Calorimeter for determining heat transmission characteristics of windows.
Bowen, R.P., et al, *American Society for Testing and Materials. Special technical publication,* 1987, No.922, Thermal insulation: materials and systems. A conference sponsored by ASTM Committee C-16 on Thermal Insulation, Dallas, TX, 2-6 Dec. 1984. [Proceedings]. Edited by F.J. Powell and S.L. Matthews, p.567-581, 3 refs.
Solvason, K.R.
Heat loss, Heat transfer, Calorimeters, Windows, Thermal insulation, Temperature effects, Thermal conductivity.

42-2417
Saline ice penetration: a joint CRREL-NSWC test program.
Cole, D.M., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1987, SR 87-14, 34p. ADA-189 206.
Steves, H.K.
Military operation, Penetration tests, Ice strength, Floating ice, Ice salinity, Projectile penetration, Impact strength, Fracturing, Ice cover thickness.
This paper reports on the response of a floating saline ice sheet to penetration and perforation by 25.4-mm-diameter projectiles with 3 nose shapes: a full cone, a truncated cone and a full flat. Impact velocity was varied to produce behavior ranging from slight penetration to complete perforation of the 210- to 280-mm-thick ice sheet. The extent of crushing and fracturing adjacent to the path of the projectile was quantified, indicating the existence of a zone of crushing extending 1 to 2 body diameters into the ice sheet from the cavity wall. A series of shots into free-floating targets indicated that for penetrations of roughly two-thirds of the sheet thickness, the depth of penetration did not vary significantly as the target size was reduced to 24 body diameters. Tests on coated projectiles indicated that no significant abrasion occurred between the ice and the nose area of the projectile. Information is also presented on the effects of gun pressure, nose shape, average sheet temperature and angle of attack on the depth of penetration.

42-2418
Analytical method for determining tetrazane in water.
Walsh, M.E., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Dec. 1987, SR 87-25, 34p., ADA-189 045, 15 refs.
Jenkins, T.F.
Explosives, Ground water, Military operation, Chemical analysis, Water pollution.
An ion-pairing RP-HPLC method was developed to determine tetrazene in water. The method uses an LC-18 column and a mobile phase of 2/3 v/v methanol-water modified by 0.01 molar 1-decanesulfonic acid sodium salt. The mobile phase pH was adjusted to 3 with glacial acetic acid. The modified mobile phase was optimal for separating of tetrazene from potential interferences by other explosive compounds such as HMX and RDX and for allowing elution of TNT within a 15-minute run time. The retention time for tetrazene was 2.8 minutes. The UV detector was set at 280 nm. A linear model with zero intercept was found to adequately describe the calibration data. The concentration range tested was 6.2-1238 microgram/L. A spike recovery test on each of 4 days gave an average recovery of 103%. A reporting limit of 7.25 microgram/L was estimated. The relative standard deviation was approximately 2% over the range tested. Tetrazene was found to be unstable in an aqueous medium at room temperature. Concentrations decreased by 96-100% over 24 hours. Chilled solutions were less prone to degradation than room temperature solutions, and heated solutions (50 C) degraded completely within two hours.

42-2419
Microwave and structural properties of saline ice.
Gow, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Oct. 1987, CR 87-20, 36p., ADA-189 307, Refs. p.32-34.
Arcone, S.A., McGrew, S.G.
Ice structure, Ice salinity, Microwaves, Ice electrical properties, Dielectric properties, Tests, Temperature effects, Brines, Models, Sea ice, Structural analysis.
The structure and salinity characteristics of saline ice slabs removed from ice sheets grown in an outdoor pool have been studied and related to the complex relative dielectric permittivity measured with free-space transmission techniques at 4.80 and 9.50 GHz. The saline ice closely simulated arctic sea ice in its structural and salinity characteristics, which were regularly monitored in a number of ice sheets grown during the winters of 1983-84 and 1984-85. *In-situ* transmission measurements at similar frequencies were also made on the ice sheets themselves using antennas located above and beneath the ice. The slab measurements were made during warming from -29 to -2 C on slabs grown during the winter of 1983-84 (4.75 GHz) and during a warming and cooling cycle over a slightly larger temperature range on slabs grown during the winter of 1984-85 (4.80 and 9.50 GHz).

42-2420
Thermal instability and heat transfer characteristics in water/ice systems.
Yen, Y.-C., *U.S. Army Cold Regions Research and Engineering Laboratory,* Nov. 1987, CR 87-22, 33p., ADA-189 627, 33 refs.
Ice water interface, Heat transfer, Meltwater, Phase transformations, Water temperature, Temperature variations, Convection, Analysis (mathematics), Density (mass/volume), Temperature distribution.
This review discusses problems associated with the anomalous temperature-density relations of water. It covers a) onset of convection, b) temperature structure and natural convective heat transfer, and c) laminar forced convective heat transfer in the water/ice system. The onset of convection in a water/ice system was found to be dependent on thermal boundary conditions, not a constant value as in the classical fluids that have a monotonic temperature-density relationship. The water/ice system also exhibits a unique temperature distribution in the melt layer immediately after the critical Rayleigh number is exceeded and soon after it establishes a more or less constant temperature region progressively deepening as the melt layer grows. The constant temperature is approximately 3.2 C for water layers formed from above but varies for melt layers formed from below. The heat flux across the water/ice interface was found to be a weak power function and to increase linearly with temperature for melted layers from above and below, respectively. Both theoretical and experimental melting studies of ice spheres, cylinders, and vertical plates show a minimum heat flux in the water/ice system due to the density extremum of 4C. The inversion temperature was from 5.1 to 5.6 C. For the case of laminar forced convection melting heat transfer, the presence of an interfacial velocity (due to phase transition) reduces heat transfer in comparison with the case without phase change.

42-2421
Dynamics of powder snow avalanches.
Scheiwiller, T., et al, *Annales geophysicae,* 1987, 5B(6), p.569-588, 36 refs.
Hutter, K., Hermann, F.
Avalanche mechanics, Mathematical models.

42-2422
Bayesian classification of surface-based ice-radar images.
Murthy, H.A., et al, *IEEE journal of oceanic engineering,* July 1987, OE-12(3), p.493-502, 15 refs.
Haykin, S.
Ice surface, Sea ice, Radar echoes, Classifications.

42-2423
Microwave remote sensing of ice in Lake Melville and the Labrador Sea.
Digby-Argus, S.A., et al, *IEEE journal of oceanic engineering,* July 1987, OE-12(3), p.503-517, 30 refs.
Hawkins, R.K., Singh, K.P.
Remote sensing, Microwaves, Ice surveys, Labrador Sea, Canada—Northwest Territories—Melville Lake.

42-2424
Predicted snow loads in Alaska.
Leslie, L.D., *Northern engineer,* Winter 1986, 18(4), p.4-9, 3 refs.
Snow loads, Snow density, United States—Alaska.

42-2425
Qualitative approach to minimizing differential heave.
Stella, D.F., *Northern engineer,* Winter 1986, 18(4), p.10-11, 5 refs.
Frost heave, Damage, Countermeasures.

42-2426
Performance of fiber optic cable at low temperatures.
Roberts, T.D., *Northern engineer,* Winter 1986, 18(4), p.12-14, 4 refs.
Transmission lines, Tests.

42-2427
Analysis of winter season precipitation bands over the Southern Plains.
Byrd, G.P., Norman, University of Oklahoma, 1987, 206p., Univesity Microfilms order No.DA8725316, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Feb. 1988, p.2[illegible].
Snowfall, Synoptic meteorology.

42-2428
Soil moisture and nitrate movement under freezing conditions.
Galinato, G.J., Jr., Ames, Iowa State University, 1987, 255p., University Microfilms order No.DA8721883, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Jan. 1988, p.2036.
Soil water migration, Nutrient cycle, Soil freezing, Frozen ground.

42-2429
Hydraulic erosion resistance of thawing soils.
Van Klaveren, R.W., Pullman, Washington State University, 1987, 233p., University Microfilms order No.-DA8724331, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Feb. 1988, p.2389-2390.
Soil erosion, Water erosion, Ground thawing.

42-2430
Numerical simulation of the full two-dimensional electrothermal de-icer pad.
Masiulaniec, K.C., Toledo, University of Toledo, 1987, 211p., Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Jan. 1988, p.2064.
Ice removal, Electric heating, Aircraft icing.

42-2431
Vegetation and floristics of pingos, central Arctic Coastal Plain, Alaska.
Walker, M.D., Boulder, University of Colorado, 1987, 432p., University Microfilms order No.DA8723514, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Feb. 1988, p.2195.
Pingos, Plant ecology.

42-2432
Material of choice for the Arctic. [Matériau de choix pour l'Arctique],
Altcin, P.-C., *Geos*, Spring 1986, 15(2), p.22-25, In French with English summary.
Winter concreting, Concretes.

42-2433
Dielectric properties of fresh-water ice at microwave frequencies.
Mätzler, C., et al, *Journal of physics D: Applied physics*, Dec. 14, 1987, 20(12), p.1623-1630, 23 refs.
Wegmüller, U.
Ice electrical properties, Dielectric properties, Microwaves.

42-2434
Aircraft icing environment in low ceiling conditions near Washington, D.C.
Guttman, N.B., et al, *Weather and forecasting*, June 1987, 2(2), p.114-126, 5 refs.
Jeck, R.K.
Aircraft icing, Clouds (meteorology).

42-2435
Cold air damming by the front range of the Colorado Rockies and its relationship to locally heavy snows.
Dunn, L., *Weather and forecasting*, Sep. 1987, 2(3), p.177-189, 11 refs.
Snowfall, Topographic effects.

42-2436
Winter forecast problems associated with light to moderate snow events in the mid-Atlantic states on 14 and 22 February 1986.
Homan, J., et al, *Weather and forecasting*, Sep. 1987, 2(3), p.206-228, 22 refs.
Uccellini, L.W.
Snowfall, Weather forecasting.

42-2437
Entering the age of the Arctic. Opportunities and obligations of an Arctic nation. Report of the U.S. Arctic Research Commission to the President and the Congress of the United States of America for the period 1 October 1986-30 September 1987.
U.S. Arctic Research Commission, Los Angeles, CA, Jan. 31, 1988, 54p.
Logistics, Sea ice distribution, Research projects, Ocean environments, Ice navigation, Ecosystems, Legislation, Offshore structures, Polar regions, Ice conditions.

42-2438
Development of a vibrational ice control system for transmission towers.
Dartmouth College. Thayer School of Engineering, Hanover, NH, Jan. 14, 1988, 48p. + appends., IR 996, 4 refs.
Donaldson, R.J.F.
Icing, Power line supports, Ice control, Vibration, Ice removal, Ice prevention, Experimentation, Damage, Ice solid interface.

42-2439
Frost action and frost protection: experience from R&D work at SVI and VTI. [Tjäle och tjälskydd: Erfarenheter från FoU-verksamheten vid SVI och VTI],
Ganddahl, R., *Sweden. Statens väg- och trafikinstitut. Meddelande*, 1987, No.546, 135p., In Swedish with English summary. 87 refs.
Frost action, Frost heave, Pavements, Frost penetration, Frost protection, Frost resistance, Ground thawing, Freeze thaw cycles, Damage, Thermal insulation.

42-2440
Soviet maritime Arctic; Proceedings.
Workshop on the Soviet Maritime Arctic, Woods Hole, MA, May 10-13, 1987, *Woods Hole Oceanographic Institution. Technical report*, Jan. 1988, WHOI-88-5, 67p., Contains 15 abstracts and an edited transcript of the concluding discussion session.
Ice navigation, Marine transportation, Natural resources, Meetings, Icebreakers, Polar regions, Ocean environments.

42-2441
Collapsible opening-closing net for zooplankton sampling through ice.
Macaulay, M.C., et al, *Journal of plankton research*, 1987, 9(6), p.1069-1073, 5 refs.
Daly, K.L.
Sea ice, Drilling, Sampling, Plankton, Ice islands, Subglacial observations.

42-2442
Principal component analysis of satellite passive microwave data over sea ice.
Rothrock, D.A., et al, *Journal of geophysical research*, Mar. 15, 1988, 93(C3), p.2321-2332, 21 refs.
Thomas, D.R., Thorndike, A.S.
Sea ice, Microwaves, Radiometry, Remote sensing.

42-2443
Ice breakup: observations of the acoustic signal.
Waddell, S.R., et al, *Journal of geophysical research*, Mar. 15, 1988, 93(C3), p.2333-2342, 11 refs.
Farmer, D.M.
Ice breakup, Ice acoustics, Fast ice, Canada—Northwest Territories—Arctic Archipelago.

42-2444
Observations of the internal structure of sea ice by X ray computed tomography.
Kawamura, T., *Journal of geophysical research*, Mar. 15, 1988, 93(C3), p.2343-2350, 13 refs. For Japanese version see 41-3880.
Sea ice, Ice structure, X ray analysis.

42-2445
Separation of electrical charges during crystallization of water droplets.
Adzhiev, A.Kh., et al, *Soviet meteorology and hydrology*, 1987, No.8, p.48-52, Translated from Meteorologiia i gidrologiia. 8 refs.
Tamazov, S.T.
Precipitation (meteorology), Cloud droplets, Freezing rate, Electric charge, Charge transfer.

42-2446
Quantitative theory of geocryological prognosis. [Kolichestvennaia teoriia geokriologicheskogo prognoza],
Grigorian, S.S., et al, Moscow Universitet, 1987, 266p., In Russian with English table of contents. 313 refs.
Kiass, M.S., Guseva, E.V., Gevorkian, S.G.
Soil freezing, Permafrost origin, Frost penetration, Permafrost thermal properties, Frost heave, Permafrost transformation, Thermokarst, Frost shattering, Geocryology, Forecasting, Frost action, Fracturing, Permafrost control, Frozen ground, Mathematical models.

42-2447
Field experiment SEA ICE-85 in mid-winter in the Bay of Bothnia.
Leppäranta, M., et al, *Meri*, 1987, No.15, 98p., Refs. passim. For selected papers see 42-2448 through 42-2453.
Ice mechanics, Research projects, Sea ice distribution, Ice navigation, Ice crystal structure, Pack ice, Remote sensing, Ice thermal properties, Ice conditions, Oceanography, Heat transfer, Snow cover, Bothnia, Bay.

42-2448
Oceanographic observations.
Walden, J., *Meri*, 1987, No.15, p.35-47.
Oceanography, Ice cover effect, Ocean currents, Boundary layer, Salinity, Bothnia, Bay.

42-2449
Snow characteristics.
Kuusisto, E., *Meri*, 1987, No.15, p.49-56.
Snow depth, Snow cover distribution, Snow density, Snow water equivalent, Snowdrifts, Pressure ridges, Bothnia, Bay.

42-2450
Remote sensing.
Thompson, T., *Meri*, 1987, No.15, p.57-63.
Remote sensing, Sea ice distribution, Snow cover, Ice conditions, LANDSAT, Side looking radar, Bothnia, Bay.

42-2451
Remote sensing: IR thermometer and ship radar.
Korhonen, O., *Meri*, 1987, No.15, p.65-68.
Remote sensing, Surface temperature, Snow cover effect, Infrared radiation, Measuring instruments, Bothnia, Bay.

42-2452
Remote sensing: NOAA AVHRR imagery.
Kemppainen, H., *Meri*, 1987, No.15, p.69-75, 5 refs.
Remote sensing, Ice conditions, Sea ice distribution, Snow cover distribution, Cloud cover, Ice edge, Temperature measurement, Bothnia, Bay.

42-2453
Use of radar (SLAR) in mapping of sea ice.
Rauste, Y., *Meri*, 1987, No.15, p.77-98, 22 refs.
Sea ice distribution, Side looking radar, Remote sensing, Radiometry, Mapping, Backscattering, Ice conditions, Bothnia, Bay.

42-2454
Assessment of impacts from intensive-use on alpine tundra vegetation and soils in Cathedral Park, B.C.: 1984.
Van Barneveld, J.W., et al, *British Columbia, Canada. Ministry of Environment and Parks. MOEP technical report*, June 1987, No.26, 173p., 36 refs.
Kowall, R.C., Williams, R.J.
Alpine tundra, Environmental impact, Vegetation, Soils, Climatic factors, Geomorphology, Landscapes, Canada—British Columbia—Cathedral Park.

42-2455
Arctic zooplankton prefer living ice algae: a caution for zooplankton excretion measurements.
Conover, R.J., et al, *Journal of plankton research*, Mar. 1988, 10(2), p.267-282, 38 refs.
Bedo, A.W., Spry, J.A.
Plankton, Algae, Subglacial observations.

42-2456
Microwave remote sensing of snowpack properties: potential and limitations.
Bernier, P.Y., *Nordic hydrology*, 1987, 18(1), p.1-20, Refs. p.17-20.
Remote sensing, Microwaves, Snow water equivalent.

42-2457
Airborne UHF radar sounding of glaciers and ice shelves, northern Ellesmere Island, Arctic Canada.
Narod, B.B., et al, *Canadian journal of earth sciences*, Jan. 1988, 25(1), p.95-105, With French summary. 36 refs.
Clarke, G.K.C., Prager, B.T.
Ice surveys, Ice cover thickness, Aerial surveys, Radio echo soundings, Glacier thickness, Ice shelves.

42-2458
Ice cracked Miranda. *New scientist*, Nov. 19, 1987, 116(1587), p.34.
Extraterrestrial ice, Clathrates.

42-2459
Problems in reclaiming stripped mined tundra lands on the North Slope, Alaska.
Bandopadhyay, S., et al, *Society of Mining Engineers. Transactions*, 1986, Vol.280, p.2028-2033, 30 refs.
Maneval, D.R.
Mining, Environmental impact, Revegetation.

42-2460
Experience in building hydroelectric developments. [Opyt stroitel'stva gidrouzlov],
Erakhtin, B.M., Moscow, Energoatomizdat, 1987, 287p. (Pertinent p.165-217, 250), In Russian with abridged English table of contents enclosed. 97 refs.
Electric power, Hydraulic structures, Concrete structures, Dams, Construction, Permafrost beneath structures, Cold weather construction, Winter concreting.

42-2461
Review of glaciological studies in the USSR in 1983-1986. [Soobshchenie o nauchnykh rabotakh po gliatsiologii v SSSR v 1983-1986 gg],
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.3-24, Prepared for the 19th General Assembly of IUGG. In Russian. 164 refs.
Glazovskiĭ, A.F.
Glaciology, Bibliographies, Research projects, Ice, Snow, Naleds.

42-2462
Workshop of the Glaciological Section and tutorial seminar in 1986. [Rabochee soveshchanie Sektsii gliatsiologii i shkola-seminar v 1986 g],
Glazovskiĭ, A.F., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.24-33, In Russian.
Meetings, Glaciology, Snow, Ice, Avalanches, Research projects.

42-2463
Problems of radio sounding of glaciers in Spitsbergen. [Problemy radiozondirovaniia lednikov Shpitsbergena],
Macheret, IU.IA., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.35-40, In Russian. Report on a discussion at the Scott Polar Research Institute.
Radio echo soundings, Glacier thickness, Glacier surveys, Remote sensing, Norway—Spitsbergen.

42-2464
Simple hydrodynamic model of nonstationary "marine" ice sheet. [Prostelshaia gidrodinamicheskaia model' nestatsionarnogo "morskogo" lednikovogo pokrova],
Mazo, V.L., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.41-48, In Russian with English summary. 40 refs.
Ice sheets, Sea ice, Ice cover thickness, Drift, Models.

42-2465
Mathematical model of meltwater filtration into snow-firn cover. [Matematicheskaia model' fil'tratsii talykh vod v snezhno-firnovoi tolshche],
Bozhinskii, A.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.48-52.
Krass, M.S.
Mathematical models, Snow cover, Firn, Meltwater, Seepage.

42-2466
Evolution of the isotope composition of oxygen in the ocean-glaciers system in Late Pleistocene. [Evoliutsiia izotopnogo sostava kisloroda sistemy "okean-ledniki" v pozdnem pleistotsene],
Nikolaev, V.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.53-61, In Russian with English summary. 54 refs.
Nikolaev, S.D.
Sea water, Chemical composition, Sea ice, Isotope analysis, Oxygen isotopes, Pleistocene, Paleoclimatology.

42-2467
Glaciation and volcanism on Deception Island in the Subantarctic. [Oledenenie i vulkanizm o. Desepshen v Subantarktike],
Govorukha, L.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.61-68, In Russian with English summary. 23 refs.
Mountain glaciers, Glacier ice, Degradation, Volcanic ash, Volcanoes.
Data obtained by the International Deception Island Expedition in 1970-71 on the present conditions of volcanism and glaciation are presented and discussed. Volcanic effects on glaciers of the island are described and main indices of the glacial regime compared to those of South Shetland Archipelago. Discussions include the effect of present volcanism on glaciers undergoing general degradation.

42-2468
Spread and formation conditions of glacial naleds in Spitsbergen. [Raspros tranenie i usloviia formirovaniia lednikovykh naledei Shpitsbergena],
Gokhman, V.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.68-76, In Russian with English summary. 16 refs.
Mountain glaciers, Glacial hydrology, Naleds, Ice composition, Periglacial processes, Polar regions, Norway—Spitsbergen.

42-2469
Macro and meso-structures on the surface of the antarctic ice sheet from satellite radar images. [Makro- i mezostruktury poverkhnosti Antarkticheskogo lednikovogo pokrova po sputnikovym radiolokatsionnym izobrazheniiam],
Nazirov, M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.76-84, In Russian with English summary. 26 refs.
Nikitin, P.A.
Glacier surfaces, Spaceborne photography, Surface structure, Radar echoes, Ice sheets.
Comparison of spaceborne radar images, obtained with the "Cosmos-1500" satellite, with traditional initial data, revealed a total agreement of catabatic wind flow lines in eastern Antarctica. Possible mechanism of the formation of eolian mesostructures in snow cover are analyzed and the identification of six ice domes, based on the nature of radio signal scattering by the ice sheet (in the sector 2-26 deg E.Long.) are discussed.

42-2470
Mechanism of the Abramov glacier surges in 1972-1975. [Mekhanizm podvizhki lednika Abramova v 1972-1975 gg.],
Glazyrin, G.E., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.84-90, In Russian with English summary. 11 refs.
Glacier surges, Mathematical models, Glacier surveys, Mass balance, Flow measurement, Flow rate.

42-2471
Resources of river and meltwater runoff in the North American mountains (from data on the World Atlas of Snow and Ice Resources). [Resursy rechnogo i talogo stoka gornykh raionov Severnoi Ameriki (po materialam Atlasa snezhno-ledovykh resursov mira)],
Ananicheva, M.D., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.91-98, In Russian with English summary. 6 refs.
Mountain glaciers, River basins, Glacial hydrology, Snow cover distribution, Snow water equivalent, River flow, Runoff, Meltwater, Maps.

42-2472
Regime of stable snow cover in North America. [Rezhim ustoichivogo snezhnogo pokrova na territorii Severnoi Ameriki],
Ivanovskaia, T.E., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.99-115, In Russian with English summary. 20 refs.
Kravchenko, G.N.
Maps, Meteorological data, Snow cover distribution, Snow depth, Snow cover stability, Forecasting, Snow melting.

42-2473
Snow cover in the Andes. [Snezhnyi pokrov v Andakh],
Kadomtseva, T.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.116-125, In Russian with English summary. 30 refs.
Snow cover distribution, Snow depth, Thermal regime, Meteorological data, Snow water equivalent, Altitude, Landscape types, Maps.

42-2474
Characteristics of snow cover distribution in Western Europe. [Osobennosti raspredeleniia snezhnogo pokrova na territorii Zapadnoi Evropy],
Loktionova, E.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.125-133, In Russian with English summary. 19 refs.
Maps, Snow cover distribution, Snow depth, Meteorological data, Alpine landscapes, Snow water equivalent, Snow cover stability, Thermal regime.

42-2475
Mathematical modeling of the dynamics of Golubin Glacier. [Matematicheskoe modelirovanie dinamiki lednika Golubina],
Alzin, V.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.135-141, In Russian with English summary. 7 refs.
Mazo, A.B.
Mathematical models, Mountain glaciers, Glacier beds, Glacier ice, Thermal regime, Mass balance, Glacier flow.

42-2476
Seismovolcanic situation on Ushakov Volcano and the surge of Bilchenok Glacier in 1980-1983. [Seismovulkanicheskaia obstanovka na Ushakovskom vulkane i podvizhka lednika Bil'chenok v 1980-1983 gg.],
Murav'ev, IA.D., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.141-147, In Russian with English summary. 22 refs.
Farberov, A.I., Chubarova, O.S., Pribylov, E.S.
Volcanoes, Mountain glaciers, Earthquakes, Glacier surges, Seismology, Glacier ice, Thermal regime.

42-2477
Changes in the Kyukyurtlu Glacier on Elbrus Mountain for a quarter century. [Izmeneniia lednika Kiukiurtliu na El'bruse za chetvert' veka],
Vinnikov, L.P., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.147-152, In Russian with English summary. 5 refs.
Labutina, I.A.
Surveys, Glaciation, Glacier flow, Flow rate, Glacier oscillation, USSR—Caucasus.

42-2478
Present state of Murkar Glacier. [Sovremennoe sostoianie lednika Murkar],
Tsomaia, V.Sh., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.152-155, In Russian with English summary. 16 refs.
Aliev, I.A.
Mountain glaciers, Glacier ice, Ice surveys, Expeditions, Glacier ablation.

42-2479
Changes in the Severnaya Zemlia ice sheet during the 20th century. [Izmeneniia lednikovogo pokrova Severnoi Zemli v XX stoletii],
Govorukha, L.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.155-158, In Russian with English summary. 12 refs.
Maps, Mountain glaciers, Glacier mass balance, Glacier ice, Ice volume.

42-2480
Temperature distribution in the antarctic ice cover along the profile Mirnyy Observatory-Vostok Station. [Raspredelenie temperatury v tolshche lednivovogo pokrova Antarktidy po profiliu observatoriia Mirnyi-stantsiia Vostok],
Blinov, K.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.159-163, In Russian with English summary. 3 refs.
Vostretsov, R.N., Dmitriev, D.N.
Ice sheets, Surveys, Ice drills, Drill core analysis, Isotope analysis, Glacier ice, Ice temperature.
Borehole measurements of ice temperature along the Mirnyy-Vostok profile revealed a distinct regularity, best expressed in marginal parts of the ice sheet, which governs variations of temperature gradient with depth in different regions. Interconnections among the temperature gradient distribution, physical properties of snow-firn deposits and global climatic changes are discussed.

42-2481
Gas hydrates in the ice of glacial covers. [Gazovye gidraty vo l'du lednikovykh pokrovov],
Mitiaev, P.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.163-165, In Russian with English summary. 8 refs.
Ice sheets, Clathrates, Ice dating, Natural gas, Hydrates, Ice cores, Ice composition, Impurities, Bubbles, Theories.
The presence of air in the form of gas hydrates at great depths of the antarctic ice was sustained theoretically and experimentally. Regarding gas formation as a phase transformation of ice into crystalline lattice composed of water molecules and stabilized by the molecules of adsorbed gas, the thermodynamic Hibbs potential is evaluated according to given mathematical formulas and its changes are discussed, with the conclusion, that gas hydrates might be present in ice sheets at temperatures and pressures existing at depths of 1100-1200 m. Short discussions on thermographic studies of ice cores are presented as an experimental proof of the existence of gas hydrates in ice, and the paleontologic significance of the results obtained (ice dating) is stressed.

42-2482
Peculiarities of the development of Spitsbergen glaciers during the last 10,000 years. [Osobennosti razvitiia oledeneniia Shpitsbergena za poslednie 10 tysiach let],
Troitskii, L.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.166-168, In Russian with English summary. 6 refs.
Glaciation, Glacier ablation, Glacial hydrology, Mountain glaciers, Glacier ice, Flow rate, Polar regions, Accumulation, Mass balance, Norway—Spitsbergen.

42-2483
Dynamics of underground glaciation. [Dinamika podzemnogo oledeneniia],
Sukhodrovskii, V.L., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, May 1987, No.60, p.168-170, In Russian with English summary. 14 refs.
Permafrost distribution, Permafrost physics, Permafrost transformation, Climatic changes, Erosion, Human factors.

42-2484
Space-time changes in the structure and strength of snow cover in the northern Tien Shan mountains. [Prostranstvenno-vremennaia izmenchivost' strukturno-prochnostnykh svoĭstv snezhnogo pokrova v gorakh Severnogo Tian'-Shania],
Girovka, N.N., *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.171-175, In Russian with English summary. 8 refs.
Alpine landscapes, Snow cover distribution, Snow cover structure, Snow depth, Snow cover stability, Avalanche formation, Avalanche triggering.

42-2485
Temperature regime of the Kungey Alatau from dendrochronological data. [Temperaturnyĭ rezhim v Kungeĭ Alatau po dendrokhronologicheskim dannym],
Borshcheva, N.M., *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.175-179, In Russian with English summary. 7 refs.
Alpine landscapes, Landscape types, Vegetation, Paleoclimatology, Paleoecology, Climatic changes, Seasonal variations, USSR—Tien Shan.

42-2486
Rock glaciers—the sources of mudflow origin in the Chegem River basin. [Kamennye gletchery—ochagi zarozhdeniia seleĭ v basseĭne r. Chegem],
Seĭnova, I.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.179-183, In Russian with English summary. 5 refs.
Mezenina, T.N.
Alpine landscapes, Thermokarst, Ice melting, Slope processes, Rock glaciers, Mudflows, USSR—Caucasus.

42-2487
Cryoperiphyton in the ice cover of the Amur River. [Krioperifiton v ledianom pokrove r. Amur],
Ivanov, A.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.184-188, In Russian with English summary. 26 refs.
IUr'ev, D.N., Lebedev, IU.M.
River ice, Sea ice, Microbiology, Algae, Cryobiology.

42-2488
Possibilities of using different types of satellite photographs in studying nival and glacial processes. [Vozmozhnosti ispol'zovaniia kosmicheskikh snimkov raznykh tipov dlia izucheniia nival'no-gliatsial'nykh protsessov],
Kravtsova, V.I., *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.189-193, In Russian with English summary.
Mapping, Aerial surveys, Infrared photography, Spaceborne photography, Radio echo soundings, Glacier oscillation, Snow line, Ice cover thickness, Glacier ice, Snow cover distribution, Seasonal variations.

42-2489
Experience in using low-frequency radar for sounding Tien Shan and Spitsbergen glaciers. [Opyt primeneniia nizkochastotnoĭ radiolokatsionnoĭ apparatury dlia zondirovaniia lednikov Tian'-Shania i Shpitsbergena],
Vasilenko, E.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.193-199, In Russian with English summary. 23 refs.
Gromyko, A.N., Macheret, IU.IA.
Mountain glaciers, Glacier ice, Ice cover thickness, Radar echoes.

42-2490
Using minicomputers in building a data base on glaciological cartography. [Ispol'zovanie minikomp'iuterov dlia sozdaniia bazy dannykh po gliatsiologicheskomu kartografirovaniiu],
Osokin, N.I., *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.200-205, In Russian with English summary. 6 refs.
Glaciology, Maps, Computer applications, Data processing, Data transmission.

42-2491
Ways of improving instruments for studying the penetration-shear properties of snow. [Puti sovershenstvovaniia priborov penetratsionno-sdvigovykh issledovaniĭ snezhnogo pokrova],
Samoĭlov, R.S., *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.205-209, In Russian with English summary. 9 refs.
Snow physics, Snow hardness, Snow strength, Penetration tests, Measuring instruments.

42-2492
Some remarks and proposals concerning the Glossary of Glaciology. [Nekotorye zamechaniia i predlozheniia otnosiashchiesia k gliatsiologicheskomu slovariu (Leningrad, Gidrometeoizdat, 1984)],
Akkuratov, V.N., *Akademiia nauk SSSR. Institut geografii. Materialy glîatsiologicheskikh issledovanĭ*, May 1987, No.60, p.211-222, In Russian.
Terminology, Glaciology, Dictionaries.

42-2493
Surging as a potential response of ice sheets to CO2-induced changes in the polar environment. Progress report, Sep. 1985-Aug. 1986.
Radok, U., et al, *U.S. Department of Energy. Report*, Aug. 1986, DOE/ER/60197-9, 23p., Refs. p.10-12.
Lingle, C.S.
Ice sheets, Climatic changes, Glacier mass balance, Carbon dioxide, Glacier surges, Sea ice, Sea level.
The past year has brought the project within sight of its twin objectives—an assessment of the current potential for antarctic surges that would affect sea level, and the development of improved models for simulating the ice sheet behavior in response to CO2-induced warming. Revised plans for the conclusion of the project, during the remainder of 1986 and a 5 month no-cost extension, have been made both necessary by personnel changes and desirable for the full exploitation of results. Abstracts of ice sheet modelling studies carried out by W.F. Budd, B.J. McInnes, D. Jenssen and I.N. Smith, with the conclusion that the effects for sea level change could be substantial but manageable, are appended. (Auth. mod.)

42-2494
Evaluation of disposable membrane filter units for sorptive losses and sample contamination.
Walsh, M.E., et al, *Environmental technology letters*, 1988, Vol.9, MP 2328, p.45-52, 13 refs.
Knapp, L.K., Jenkins, T.F.
Filters, Sampling.

42-2495
Arctic and offshore research. *U.S. Dept. of Energy. Morgantown Energy Technology Center. Technology status report*, Jan. 1987, DOE/METC-87/0247, 32p., DE87001028, 17 refs.
Hydrocarbons, Sea ice distribution, Research projects, Offshore drilling, Natural resources, Ice scoring, Ice mechanics, Arctic Ocean.

42-2496
Beaufort Sea Mesoscale Circulation Study: Hydrography USCGC *Polar Star* cruise, October 1986.
Aagaard, K., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA data report*, July 1987, ERL PMEL-19, 83p., 6 refs.
Salo, S., Krogslund, K.
Water chemistry, Water temperature, Salinity, Temperature gradients, Statistical analysis, Suspended sediments, Plankton, Chlorophylls, Beaufort Sea.

42-2497
Shape of creep curves in frozen soils and polycrystalline ice.
Fish, A.M., *Canadian geotechnical journal*, Nov. 1987, 24(4), MP 2329, p.623-629, 12 refs.
Soil creep, Ice creep, Frozen ground mechanics, Ice mechanics, Rheology, Mathematical models, Stresses, Temperature effects.
A new method was developed for determining creep parameters, particularly the time to failure, from a single linear plot in which an individual creep curve forms a straight line for primary and tertiary creep. Secondary creep is considered to be a principal point on this line that predetermines the onset of failure. The times to failure can be predicted, even when creep tests are not complete, by extrapolating information obtained for primary creep. Based upon T.H. Jacka's test data, prediction of creep strain was evaluated using the constitutive equation of A.M. Fish for entire creep and compared with the modified Sinha equation of M.F. Ashby and P. Duval for attenuating creep as well as with models for primary and secondary creep. It is shown that the shape of the creep curves, and thus the creep parameters, varies with stress, temperature, and other factors. Hence, a family of creep curves cannot be described by a constitutive equation with a single set of creep parameters that do not take into account these variations without loss in the accuracy of the creep strain calculations.

42-2498
Comparison of methanol and tetraglyme as extraction solvents for determination of volatile organics in soil.
Jenkins, T.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1987, SR 87-22, 26p., ADA-189 028, 23 refs.
Schumacher, P.W.
Soil chemistry, Waste disposal, Water pollution, Detection, Solubility.
The abilities of methanol and tetraglyme to extract chloroform, benzene, toluene, and tetrachloroethylene from vapor-contaminated soils are directly compared. Comparisons are made both with respect to process kinetics and analyte recovery using an extraction procedure based on equilibration on a wrist-action shaker and determination using a purge-and-trap GC/MS. An equilibration period of 10 minutes is recommended for extraction using either methanol or tetraglyme. In all cases methanol was as good as or better than tetraglyme with respect to analyte recovery. This was even the case for soils contaminated with an oily residue. While commercial methanol and tetraglyme both contain measurable levels of volatile aromatics, simple rotary evaporation was successful in removing these contaminants to levels below detection limits for tetraglyme. Thus, for cases where very small amounts of these contaminants must be detected, degassed tegraglyme would be superior. Overall, however, methanol is considered the best choice for extraction of volatile organics where subsequent analysis is to be conducted by purge-and-trap GC/MS.

42-2499
Austral spring microalgae across the Weddell Sea ice edge: spatial relationships found along a northward transect during AMERIEZ 83.
Fryxell, G.A., et al, *Deep-sea research*, Jan. 1988, 35(1A), p.1-20, Refs. p.16-19.
Kendrick, G.A.
Ice cover effect, Algae, Microbiology, Antarctica—Weddell Sea.
In the northwestern Weddell Sea and eastern Scotia Sea on a transect north from ice-covered, through ice-melt, to open-ocean stations, microalgae were compared to document an enhanced biological activity expected near the ice edge. The highest numbers of cells were found in open water, with 68,-700,000,000 cells/sq m north of the ice edge. The dominant taxa under the ice and in the ice-melt stations were the pennate diatom genus *Nitzschia* and the prymnesiophyte *Phaeocystis*. In the open ocean, the dominants were the centric diatom *Thalassiosira gravida* and *Phaeocystis*. Although *Phaeocystis* cells were frequently dominant in number, the genus represented far less carbon than *T. gravida* in open waters; *Phaeocystis* presents a taxonomic and ecological enigma in comparison with accounts from the Northern Hemisphere in that it was abundant where diatoms also flourished. *Nitzschia* survived in low light under the ice and in the brine pockets in the ice and increased steadily in abundance at the ice edge in the open water, whereas *Thalassiosira* was most abundant to the north and west where the water had recently been uncovered by the retreating ice edge. Of the three dominant taxa, *Nitzschia* appears to provide the best food base for the zooplankton such as krill. (Auth. mod.)

42-2500
Cumulation of chloroorganic insecticides by antarctic marine diatoms.
Lukowski, A.B., et al, *Polish polar research*, 1987, 8(2), p.167-177, 11 refs.
Ligowski, R.
Sea water, Water pollution, Ice composition, Algae, Antarctica—Admiralty Bay.
In summer 1983-1984 samples of planktonic and attached diatoms were collected in the Admiralty Bay as well as in the region of South Orkneys, Drake Passage and Bransfield Strait. Using gas chromatography, residues of chloroorganic pesticides namely the compounds of the DDT group and HCH isomers, were determined. It was found that the highest values of the content of these compounds occurred in attached diatoms coming from areas continuously washed with water from the melting glacier, in planktonic diatoms from the samples of the Admiralty Bay and from strongly glaciated regions. The hypothesis is put forward that, along with the direct atmospheric transport, the release of the deposits of these compounds from ice and glaciers during their melting is an additional source of input of chloroorganic biocides into antarctic waters. Diatoms are good indicators of this process. (Auth.)

42-2501
Snow fence handbook (Release 1.1).
Tabler, R.D., Laramie, WY, Tabler & Associates, 1988, 6 chapters, Refs. passim.
Snow fences, Blowing snow, Snowdrifts, Wind factors, Snow mechanics, Precipitation (meteorology), Design, Manuals.

42-2502
Technology of ice class ships. Possibilities for 1986. [Technologie des navires de cote arctique. Possibilités actuelles—1986],
Melville Shipping, Ltd., *Transport Canada. [Report]*, Mar. 1988, TP 8387F, 82p., In French with English summary.
Icebreakers, Ice navigation, Sea ice distribution, Ice conditions, Design, Marine meteorology, Radio communication, Safety.

42-2503
Modeling solute segregation during freezing of peatland waters.
Kadlec, R.H., et al, *Water resources research,* Feb. 1988, 24(2), p.219-224, 20 refs.
Li, X.-M., Cotten, G.B.
Solutions, Soil freezing, Peat, Liquid solid interfaces, Heat transfer, Mathematical models, Surface waters.

42-2504
Melting of polar ice caps.
Barry, R.G., *Weather,* Feb. 1988, 43(2), p.60-61, 3 refs.
Ice sheets, Ice melting, Isostasy, Climatic changes.
More data are added to an earlier response to F.E. Lumb's concern for a global rise in sea level due to glacier melting and thermal expansion of the ocean. Based on a 1985 report of the Polar Research Board, the possibility is suggested that by AD 2100 the sea could rise by 0.1-0.3 m from each of two causes: the collapse of the West Antarctic ice sheet because it is insecurely grounded, and wastage of small glaciers produced by global warming.

42-2505
Emerging polar ship technology: an introduction.
Brigham, L.W., *Marine Technology Society journal,* Sep. 1987, 21(3), p.3-5, 2 refs.
Ships, Ice navigation, Icebreakers, Design.

42-2506
M.V. *Arctic*: Arctic vessel design and operations.
Luce, M.P., *Marine Technology Society journal,* Sep. 1987, 21(3), p.6-11.
Ships, Ice navigation, Design.

42-2507
***Shirase* and icebreaking ship technology in Japan.**
Akai, K., et al, *Marine Technology Society journal,* Sep. 1987, 21(3), p.12-19, 4 refs.
Narita, S.
Icebreakers, Rescue operations, Propellers, Ice navigation, Design.
The *Shirase* is a combination icebreaker-research vessel. Experience accumulated over 18 years with the *Fuji*, its predecessor, went into the design of the new ship. The *Shirase's* main functions, hull form and structure, ice breaking performance, electric propulsion system, propellers, and hull fitting are described and illustrated. Antarctic activities of the ship since 1983 are outlined, notably a successful rescue operation to free the Australian vessel *Nella Dan* that had been icebound for over 50 days.

42-2508
Safe shipping in the Canadian Arctic: risks and responsibilities.
Lamson, C., *Marine Technology Society journal,* Sep. 1987, 21(3), p.20-28, 22 refs.
Ice navigation, Icebreakers, Marine transportation.

42-2509
Remote sensing in ice navigation.
Leavitt, E.D., et al, *Marine Technology Society journal,* Sep. 1987, 21(3), p.29-36, 12 refs.
McAvoy, G.
Ice navigation, Remote sensing, Ice conditions, Airborne radar.

42-2510
Solving icebreaker design problems using ice model basins.
Free, A.P., *Marine Technology Society journal,* Sep. 1987, 21(3), p.37-47, 15 refs.
Icebreakers, Design, Models.

42-2511
Design features and bi-polar operation of the icebreaking resupply ship M/V *Icebird*.
Cosgriff, L.E., *Marine Technology Society journal,* Sep. 1987, 21(3), p.48-55.
Icebreakers, Design, Marine transportation, Ice navigation.
M/V *Icebird*, the world's first vessel purposely built for polar resupply, in 1984 ushered in a new era in polar transportation and scientific expedition support. *Icebird's* design features and icebreaking capability allow unescorted operation in ice conditions that would preclude the use of either conventional or merely "ice strengthened" vessels of low ice class. This article discusses *Icebird's* principal features and reviews her performance over the past three years in both the Arctic and Antarctic. (Auth.)

42-2512
Application of expert systems to ice piloting and ice navigation.
Voelker, R.P., et al, *Marine Technology Society journal,* Sep. 1987, 21(3), p.56-63, 2 refs.
Daley, C.G., Glen, I.F.
Ice navigation, Icebreakers, Computer applications.

42-2513
Instrumentation for measuring forces on icebreakers.
Ghoneim, G.A., *Marine Technology Society journal,* Sep. 1987, 21(3), p.64-74, 23 refs.
Ice navigation, Ice pressure, Stresses.

42-2514
Thyssen/Waas icebreaking hull form.
Milano, V.R., *Marine Technology Society journal,* Sep. 1987, 21(3), p.75-87, 10 refs.
Icebreakers, Design, Stresses.

42-2515
New Soviet Antarctic research ship *Akademik Fedorov*.
Brigham, L.W., *Marine Technology Society journal,* Sep. 1987, 21(3), p.88-91, 2 refs.
Ships, Icebreakers, Propellers.
Design characteristics and facilities of the new Finnish-built Soviet ship *Akademik Fedorov* are described and illustrated. The ship's primary mission is to resupply Soviet antarctic stations. A table comparing the features of several antarctic resupply and research ships is presented.

42-2516
Evaporation from the surface of the snow cover. Results of the measurements made at the research station of Harzgerode. [Verdunstung von der Oberfläche der Schneedecke. Ergebnisse der an der Forschungsstation Harzgerode durchgeführten Messungen],
Rachner, M., *Zeitschrift für Meteorologie,* 1987, 37(5), p.285-290, In German with English summary. 31 refs.
Snow evaporation, Meteorological factors, Germany —Harzgerode.

42-2517
Electron spin-echo study of Cu(II)-(His)n in frozen aqueous solution.
Romanelli, M., et al, *Chemical physics letters,* Jan. 22, 1988, 143(4), p.404-408, 21 refs.
Basosi, R.
Solutions, Molecular structure.

42-2518
Caterpillars on ice.
Kukal, O., *Natural history,* Jan. 1988, 97(1), p.36-41.
Cryobiology, Animals.

42-2519
Erosion of ices: physical and astrophysical discussion.
Rocard, F., et al, *International journal of radiation effects,* Sep. 1986, 99(1-4), p.97-104, 13 refs.
Extraterrestrial ice, Ice erosion, Films, Radiation.

42-2520
Comparative field study of calcium magnesium acetate and rock salt during the winter of 1986-1987.
Manning, D.G., et al, Downsview, Ontario, Ministry of Transportation and Communications, Sep. 1987, 32p. + 2 appends., ME-87-16, 3 refs.
Crowder, L.W.
Chemical ice prevention, Snow removal, Ice control, Road maintenance, Winter maintenance, Wind factors, Equipment, Tests, Salting.

42-2521
Testing of the 1:8 scale model of the R-class in level ice.
Howard, D., et al, *Transport Canada. Report,* Dec. 1987, TP 8828E, 43p. + appends., With French summary. 8 refs.
Abdelnour, R.
Icebreakers, Ice breaking, Ice strength, Ice conditions, Tests, Models, Statistical analysis.

42-2522
CIRED 1985; 8th International Conference on Electricity Distribution, Part 1—Full texts of contributions included in the programme.
International Conference on Electricity Distribution, 8th, May 20-24, 1985, *Institution of Electrical Engineers. IEE conference publication,* 1985, No.250, 471p., Refs. passim. For selected papers see 42-2523 through 42-2525.
Transmission lines, Power line icing, Power line supports, Ice loads, Snow loads, Climatic factors, Computer applications, Meetings, Equipment.

42-2523
Findings and conclusions from snow disasters and their effects on the construction of medium-voltage overhead lines.
Brandt, E., et al, *Institution of Electrical Engineers. IEE conference publication,* 1985, No.250, International Conference on Electricity Distribution, 8th, May 20-24, 1985; CIRED 1985, p.160-164, 5 refs.
Fiss, H.-J.
Power line icing, Transmission lines, Ice loads, Snow loads, Power line supports, Snowstorms, Design, Wet snow.

42-2524
Protection of overhead lines against exceptional climatic hazards.
Dalle, B., et al, *Institution of Electrical Engineers. IEE conference publication,* 1985, No.250, International Conference on Electricity Distribution, 8th, May 20-24, 1985; CIRED 1985, p.165-171, 7 refs.
Gland, H., Lapeyre, J.L., Vieille, J.
Power line icing, Ice prevention, Ice loads, Wind factors, Protection, Snowfall, Temperature effects, Wet snow, Design criteria.

42-2525
Planning and development of a 20 KV compact line for SCHLESWAG.
Boos, K.V., et al, *Institution of Electrical Engineers. IEE conference publication,* 1985, No.250, International Conference on Electricity Distribution, 8th, May 20-24, 1985; CIRED 1985, p.175-179, 9 refs.
Herzig, K.H.
Power line icing, Transmission lines, Ice loads, Climatic factors, Tests, Safety.

42-2526
Field procedure for estimating soil thermal environments.
Flint, A.L., et al, *Soil Science Society of America. Journal,* Sep.-Oct. 1987, 51(5), p.1326-1331, 17 refs.
Childs, S.W.
Soil temperature, Forest soils, Heat flux, Revegetation, Heat capacity, Thermal conductivity, Density (mass/volume), Soil water.

42-2527
Annotated bibliography on Soviet northern transport 1975-1986.
North, R.N., *University of British Columbia. Department of Geography. Department paper,* [1987], No.38, 163p.
Ice navigation, Transportation, Railroads, Pipelines, Bibliographies, Polar regions.

42-2528
Surficial geologic map of the Anchorage B-7 NW quadrangle, Alaska.
Yehle, L.A., et al, *U.S. Geological Survey. Open-file report,* 1987, 87-168, 11p. + maps, 24 refs.
Schmoll, H.R.
Glacial deposits, Geological maps, Moraines, Paleoclimatology, Meltwater, Pleistocene, United States —Alaska—Anchorage.

42-2529
On the aerodynamic roughness of sea ice areas in the Arctic. [Zur aerodynamischen Rauhigkeit arktischer Meereisflächen],
Belitz, H.-J., et al, *Meteorologische Rundschau,* Aug. 1987, 40(4), p.97-107, In German with English summary. 7 refs.
Kottmeier, C., Hartig, R., Stuckenberg, H.-U.
Ice surface, Surface roughness, Wind (meteorology).

42-2530
Prospects for the development of marine radio-communication systems. [Perspektivy razvitiia sistem morskoĭ radiosviazi],
Pereaypkin, V.I., ed, Leningrad, Transport, 1986, 129p., In Russian. For selected paper see 42-2531.
Ice navigation, Ice surveys, Remote sensing, Mapping, Radio communication.

42-2531
Principles of compiling an automated naval system for selecting optimal routes of ice navigation. [Printsipy postroeniia sudovogo avtomatizirovannogo kompleksa vybora optimal'nykh puteĭ ledovoĭ provodki],
Ionikas, P.S., et al, Leningrad, Transport, 1986, p.14-22, In Russian. 4 refs.
Kapustin, A.N., Likhachev, A.V., IAkshevich, E.V.
Sea ice distribution, Ice conditions, Ice navigation, Ice surveys, Ice reporting, Remote sensing, Mapping, Radio communication.

42-2532
Advanced types of marine transport vessels. [Perspektivnye tipy morskikh transportnykh sudov],
Peresypkin, V.I., ed, Leningrad, Transport, 1986, 160p., In Russian. For selected papers see 42-2533 through 42-2535. Refs. passim.
Ice navigation, Transportation, Ships, Ice breaking, Icebreakers, Propellers, Design.

42-2533
Necessity of using controllable propellers on ice navigating vessels. [O neobkhodimosti ispol'zovaniia VRSh na sudakh ledovogo plavaniia],
Ivanov, S.N., Perspektivnye tipy morskikh transportnykh sudov (Advanced types of marine tranport vessels) edited by V.I. Peresypkin, Leningrad, Transport, 1986, p.45-53, In Russian. 8 refs.
Ice navigation, Sea ice distribution, Ships, Propellers.

42-2534
Selection of the design regime for calculating propellers of ice navigating transport ships. [Vybor raschetnogo rezhima pri proektirovanii grebnykh vintov transportnykh sudov ledovogo plavaniia],
Fomenko, IU.I., Perspektivnye tipy morskikh transportnykh sudov (Advanced types of marine tranport vessels) edited by V.I. Peresypkin, Leningrad, Transport, 1986, p.79-85, In Russian. 2 refs.
Ice navigation, Ships, Propellers, Design.

42-2535
Methods of determining rational parameters of large-capacity icebreaking transport ships. [Metodologiia opredeleniia ratsional'nykh parametrov krupnotonazhnykh ledokol'no-transportnykh sudov],
Tsoi, L.G., Perspektivnye tipy morskikh transportnykh sudov (Advanced types of marine tranport vessels) edited by V.I. Peresypkin, Leningrad, Transport, 1986, p.106-109, In Russian. 3 refs.
Ice navigation, Ice breaking, Icebreakers, Ships, Design.

42-2536
Surface forces.
Deriagin, B.V., et al, New York, Consultants Bureau, 1987, 440p. (Pertinent p.232-244, 409-426), Translation of Poverkhnostnye sily, Moscow, Nauka, 1985. 108 refs.
Churaev, N.V., Muller, V.M.
DLC QD506.D4213 1987
Freezing points, Water films, Ice lenses, Hydrogen bonds, Ice water interface, Temperature effects, Analysis (mathematics), Molecular structure, Surface properties.

42-2537
Causes of two slope-failure types in continental-shelf sediment, northeastern Gulf of Alaska.
Schwab, W.C., et al, *Journal of sedimentary petrology,* Jan. 1988, 58(1), p.1-11, 57 refs.
Lee, H.J.
Slope processes, Glacial deposits, Marine deposits, Marine geology, Sediments, Earthquakes, Ocean waves, Shear strength, Soil erosion, United States—Alaska—Icy Bay.

42-2538
Model for striated boulder pavement formation on glaciated, shallow-marine shelves: an example from the Yakataga Formation, Alaska.
Eyles, C.H., *Journal of sedimentary petrology,* Jan. 1988, 58(1), p.62-71, 64 refs.
Glacial deposits, Striations, Marine deposits, Rocks, Models, Pleistocene, Glacier flow, United States—Alaska—Middleton Island.

42-2539
November 13, 1985 eruption at Nevado del Ruiz (Central Cordillera, Colombia): relationships between eruptive dynamism, ice melting and the genesis of catastrophic lahars. [L'éruption du 13 Novembre 1985 au Nevado El Ruiz (Cordillère Centrale, Colombie): interactions entre le dynamisme éruptif, la fusion glaciaire et la genèse d'écoulements volcano-glaciaires],
Thouret, J.C., et al, *Académie des Sciences, Paris. Comptes rendus. Ser.2,* July 30, 1987, 305(6), p.505-509, In French with English summary. 8 refs.
Volcanoes, Ice melting, Slope processes.

42-2540
Amplifying mechanism for the climatic cycle: the "sea ice lid effect" controls the changes in atmospheric carbon dioxide. [Mécanisme d'amplification du cycle climatique global: l'effet de couvercle de la glace de mer contrôle le CO2 atmosphérique],
Faure, H., *Académie des Sciences, Paris. Comptes rendus. Ser.2,* July 30, 1987, 305(6), p.523-527, In French with English summary. 23 refs.
Ice cover effect, Sea ice, Climatic changes, Carbon dioxide.
Sea-ice extension at the end of a glacial cycle constitutes a CO2-tight lid on the cold oceanic surface waters of both hemispheres. Thus, the global ocean is no longer a sink for atmospheric CO2 because of this "sea-ice lid effect". The rapid increase of CO2 in the atmosphere, together with a rise in sea level is responsible for the accelerated temperature increase and sea-ice melting. The cold oceans, freed from their ice lid can become a CO2 sink. A new glacial cycle may thus be triggered. (Auth.)

42-2541
Distribution, structure, and composition of freshwater ice deposits in Bolivian salt lakes.
Hurlbert, S.H., et al, *Hydrobiologia,* Jan. 30, 1988, Vol.158, p.271-299, 36 refs.
Chang, C.C.Y.
Underwater ice, Permafrost beneath lakes, Ground ice, Ice lenses.

42-2542
Model for glacial and proglacial sedimentation in the shield terrane of southern Ontario.
Kaszycki, C.A., *Canadian journal of earth sciences,* Dec. 1987, 24(12), p.2373-2391, With French summary. 38 refs.
Glacial deposits, Canada—Ontario.

42-2543
Dislocation climb in ice observed by etching and replicating.
Sinha, N.K., *Journal of materials science letters,* Dec. 1987, 6(12), p.1406-1408, 3 refs.
Ice crystals, Ice creep, Scanning electron microscopy.

42-2544
Theory and methods of regional hydrogeological investigations (collection of scientific papers). [Teoriia i metody regional'nykh gidrogeologicheskikh issledovanii (Sbornik nauchnykh trudov)],
Frolov, N.M., ed, Moscow, VSEGINGEO, 1985, 125p., In Russian. For selected paper see 42-2545. 8 refs.
Mapping, Permafrost distribution, Sporadic permafrost, Discontinuous permafrost, Route surveys, Aerial surveys, Surveys.

42-2545
Experience in combining methods of mapping permafrost in the zone of its insular distribution (the case of Pribaykal'ye). [Opyt kompleksirovaniia metodov kartografirovaniia kriogennykh massivov v zone ostrovnogo rasprostraneniia (na primere Pribaĭkal'ia)],
Gostev, A.N., Teoriia i metody regional'nykh gidrogeologicheskikh issledovanii (Theory and methods of regional hydrogeological investigations). Edited by N.M. Frolov, Moscow, VSEGINGEO, 1985, p.51-58, In Russian. 8 refs.
Mapping, Sporadic permafrost, Discontinuous permafrost, Permafrost distribution, Route surveys, Aerial surveys, Baykal Amur railroad, Surveys.

42-2546
Hydraulic and static studies of hydraulic structures. [Gidravlicheskie i staticheskie issledovaniia gidrotekhnicheskikh sooruzhenii],
Rzhanitsyn, N.A., ed, Moscow, Izd-vo Universiteta druzhby narodov, 1986, 179p., In Russian. For selected paper see 42-2547.
Concrete structures, Hydraulic structures, Thermal stresses, Frost action, Alpine landscapes.

42-2547
Temperature effect on concrete dams of high-mountain regions of Afghanistan. [K voprosu o temperaturnykh vozdeĭstviiakh na betonnye plotiny v vysokogornykh raĭonakh Afganistana],
Fomin, B.G., Gidravlicheskie i staticheskie issledovaniia gidrotekhnicheskikh sooruzhenii (Hydraulic and static studies of hydraulic structures) edited by N.A. Rzhanitsyn, Moscow, Izd-vo Universiteta druzhby narodov, 1986, p.172-178, In Russian.
Frost action, Hydraulic structures, Concrete freezing, Concrete structures, Dams, Thermal stresses, Design, Alpine landscapes.

42-2548
Thermophysical studies of elements in power producing installations. [Teplofizicheskie issledovaniia elementov energeticheskikh ustanovok],
Dolinskiĭ, A.A., ed, Kiev, Naukova dumka, 1986, 172p., In Russian. For selected paper see 42-2549. 11 refs.
Electric power, Hydraulic structures, Earth dams, Permafrost control, Thermopiles.

42-2549
Probability model of thermopile performance in thermostatic control systems for frozen structures. [Veroiatnostnaia model' raboty termosifona v sistemakh termostatirovaniia merzlykh sooruzhenii],
Glamazdin, P.M., et al, Teplofizicheskie issledovaniia elementov energeticheskikh ustanovok (Thermophysical studies of elements in power producing installations) edited by A.A. Dolinskiĭ, Kiev, Naukova dumka, 1986, p.44-54, In Russian. 11 refs.
Nikiforov, V.A.
Thermopiles, Permafrost control, Frozen ground, Hydraulic structures, Mathematical models.

42-2550
Russian-English glossary of geocryology. [Russko-angliĭskaia terminologiia po geokriologii],
Fedorov, I.S., Yakutsk, 1984, 112p., In Russian. 8 refs.
Dictionaries, Geocryology, Glaciology.

42-2551
Airborne electromagnetic sounding of sea ice thickness and sub-ice bathymetry.
Kovacs, A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Dec. 1987, CR 87-23, 40p., ADA-188 939, 21 refs.
Valleau, N.C., Holladay, J.S.
Ice cover thickness, Remote sensing, Sea ice, Electromagnetic prospecting, Sounding, Subglacial observations, Airborne equipment, Analysis (mathematics).
A study was made in May 1985 to determine the feasibility of using an airborne electromagnetic sounding system for profiling sea ice thickness and the sub-ice water depth and conductivity. The study was made in the area of Prudhoe Bay, Alaska. The multifrequency airborne electromagnetic sounding system consisted of control and recording electronics and an antenna. The electronics module was installed in a helicopter, and the 7-m-long tubular antenna was towed beneath the helicopter at about 35 m above the ice surface. For this electromagnetic system, both first-year and second-year sea ice could be profiled, but the resolution of ice thickness decreased as the ice became rough. This decrease was associated with the large footprint of the system, which effectively smoothed out the sea ice relief. Under-ice water depth was determined, as was seawater conductivity. The results of the feasibility study were encouraging, and further system development is therefore warranted.

42-2552
Naleds. [Naledi],
Alekseev, V.R., Novosibirsk, Nauka, 1987, 256p., In Russian with English table of contents enclosed. Refs. p.242-254.
Naleds, Ice physics, Glacial hydrology, Ice formation, Alimentation, Ice accretion, Ice (water storage), Hydrothermal processes, Ice melting, Ground ice, Classifications, Terminology.

42-2553
Bivariate self-modeling solutions of one-phase Stefan problems. [Dvumernye avtomodel'nye resheniia odnofaznoĭ zadachi Stefana],
Anisiutin, B.M., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Gidrodinamika vzryva (Dinamika sploshnoĭ sredy). Sbornik nauchnykh trudov,* 1986, Vol.78, p.10-20, In Russian. 10 refs.
Melʹmanov, A.M.
Stefan problem, Melting, Mathematical models.

42-2554
Snow and ice albedo from observational data and mathematical models. [Al'bedo snega i l'da po dannym nabliudeniĭ i model'nykh raschetov],
Kondrat'ev, K.IA., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy,* 1986, Vol.509, p.33-59, In Russian. 77 refs.
Ter-Markariants, N.E.
Atmospheric circulation, Climatology, Mathematical models, Soil air interface, Snow air interface, Ice air interface, Hydrothermal processes.

42-2555
Methods and some results of processing data on contrasts of ice-water radiation obtained with a scanning airborne radiometer. [Metodika i nekotorye rezul'taty obrabotki kontrastov izlucheniia led-voda po dannym samoletnogo skaniruiushchego radiometra],
Aleksandrov, V.IU., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy,* 1986, Vol.509, p.162-178, In Russian. 5 refs.
Ice water interface, Radiometry, Aerial surveys.

42-2556
Numerical method of short-range forecasting of ice redistribution in the Barents Sea for spring-summer periods. [Chislennyĭ metod kratkosrochnogo prognoza pereraspredeleniia l'da v Barentsevom more dlia vesenne-letnego perioda],
Zubakin, G.K., et al, *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1986, Vol.281, p.15-23, In Russian. 11 refs.
Zuev, A.N.
Sea ice distribution, Ice forecasting, Ice conditions.

42-2557
Long range forecasting of ice season duration in northeastern ports of the USSR. [K voprosu o dolgosrochnom prognoze prodolzhitel'nosti ledovogo sezona v portakh severo-zapadnykh morei SSSR],
Sheremetevskaia, O.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1986, Vol.281, p.58-65, In Russian. 7 refs.
Sea water freezing, Ports, Ice conditions, Ice forecasting.

42-2558
Water freezing temperature in the upper micro-layer (the case of the North Atlantic Ocean). [Temperatura zamerzaniia vody v poverkhnostnom mikrosloe (na primere Severnoĭ Atlantiki)],
Mikhallov, V.I., et al, *Moscow. Gosudarstvennyĭ okeanograficheskiĭ institut. Trudy*, 1986, Vol.177, p.87-92, In Russian. 7 refs.
Nazarenko, B.S.
Sea water freezing, Boundary layer, Air temperature, Air water interactions, Heat transfer, Water temperature.

42-2559
Modeling the electromagnetic property trends in sea ice; Part 1.
Kovacs, A., et al, *Cold regions science and technology*, Oct. 1987, 14(3), MP 2330, p.207-235, 33 refs.
Morey, R.M., Cox, G.F.N.
Ice physics, Electromagnetic properties, Sea ice, Dielectric properties, Mathematical models, Electrical resistivity, Ice cover thickness, Pressure ridges, Brines.

42-2560
Modelling of coupled heat, moisture and stress field in freezing soil.
Mu, S., et al, *Cold regions science and technology*, Oct. 1987, 14(3), p.237-246, 24 refs.
Ladanyi, B.
Soil freezing, Heat transfer, Frost heave, Soil water migration, Stresses, Soil creep, Mathematical models, Frost penetration.

42-2561
Constitutive model for ice as a damaging visco-elastic material.
Sjölind, S.-G., *Cold regions science and technology*, Oct. 1987, 14(3), p.247-262, 22 refs.
Ice physics, Viscoelastic materials, Ice cracks, Stress strain diagrams, Ice elasticity, Brittleness, Temperature effects, Theories, Damage, Thermodynamics, Analysis (mathematics), Ice creeps.

42-2562
Exponential smoothing to predict iceberg trajectories.
Moore, M., *Cold regions science and technology*, Oct. 1987, 14(3), p.263-272, 9 refs.
Icebergs, Drift, Ice solid interface, Analysis (mathematics), Statistical analysis, Ice mechanics.

42-2563
Comparison of the creep behavior of saline ice and frozen saline Ottawa sand at -8 C.
Pharr, G.M., et al, *Cold regions science and technology*, Oct. 1987, 14(3), p.273-279.
Godavarti, P.S.
Ice creep, Soil creep, Sands, Frozen ground mechanics, Temperature effects, Saline soils, Sea ice, Rheology, Compressive properties, Stress strain diagrams.

42-2564
Camp Century survey 1986.
Gundestrup, N.S., et al, *Cold regions science and technology*, Oct. 1987, 14(3), MP 2331, p.281-288, 24 refs.
Clausen, H.B., Hansen, B.L., Rand, J.H.
Boreholes, Surface migration, Remote sensing, Ice mechanics, Velocity, Topographic features, Drilling, Greenland—Camp Century.
Directional surveys of the bore-hole at Camp Century, Greenland were made in 1966, 1967 and 1969. From these surveys a surface velocity of 5.5 m/yr in the direction 240 deg was computed. The position of the 60 m meteorological tower near the bore-hole was measured in 1977 and 1986 with satellite navigation equipment. These measurements show a surface velocity of 3.5 m/yr in the direction 235 deg. Measurement of the surface topography in 1986 shows the bore-hole is situated on a local sloping ice divide. A differential magnetometer was used to locate the drill tower. Hand augering verified the location and showed the drill tower was buried 6.5 to 7 m beneath the 1986 snow surface, as expected from the depth-age relation. The casing was not identified. Extension of the casing to the snow surface and resurvey of the bore-hole will provide urgently needed information on the variation of ice flow with depth.

42-2565
Airborne electromagnetic sounding of sea ice thickness and sub-ice bathymetry.
Kovacs, A., et al, *Cold regions science and technology*, Oct. 1987, 14(3), MP 2332, p.289-311, For another source see 42-2551. 21 refs.
Valleau, N.C., Holladay, J.S.
Ice cover thickness, Subglacial observations, Electromagnetic prospecting, Airborne radar, Snow cover thickness, Ice conditions, Sounding, Sea ice, Profiles, United States—Alaska—Prudhoe Bay.
A study was made in May 1985 to determine the feasibility of using an airborne electromagnetic sounding system for profiling sea ice thickness and the sub-ice water depth and conductivity. The study was made in the area of Prudhoe Bay, Alaska. The multifrequency airborne electromagnetic sounding system consisted of control and recording electronics and an antenna. The electronics module was installed in a helicopter, and the 7 m long tubular antenna was towed beneath the helicopter at about 35 m above the ice surface. For this electromagnetic system, both first-year and second-year sea ice could be profiled, but the resolution of ice thickness decreased as the ice became rough. This decrease was associated with the large footprint of the system, which effectively smoothed out the sea ice relief. Under-ice water depth was determined, as was seawater conductivity. The results of the feasibility study were encouraging, and further system development is therefore warranted.

42-2566
Deformations and stresses in freezing and thawing rocks. [Deformatsii i napriazheniia v promerzaiushchikh i ottaivaiushchikh porodakh],
Ershov, E.D., ed, Moscow, Universitet, 1985, 168p., In Russian with English table of contents enclosed. 67 refs.
Permafrost physics, Ground ice, Ice physics, Active layer, Seasonal freeze thaw, Cryogenic soils, Frost action, Stress strain diagrams, Frost penetration, Soil water migration, Frost heave.

42-2567
OTC '87 proceedings.
Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987, 1987, 4 vols., Refs. passim. For selected papers see 42-2568 through 42-2580.
Offshore structures, Offshore drilling, Ice loads, Ice pressure, Meetings, Drift, Impact strength, Design, Ice conditions.

42-2568
SF-500 turret-moored icebreaker drillship.
Williford, F.B., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.1, 1987, p.25-33.
Winkler, R.S.
Icebreakers, Offshore drilling, Offshore structures, Ice conditions, Sea ice, Design, Environmental protection, Ice mechanics.

42-2569
Arctic marine seismic acquisition feasibility: a case study.
Sheline, H.E., Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.1, 1987, p.161-168, 6 refs.
Offshore drilling, Ice conditions, Sea ice distribution, Pack ice, Seismic surveys, Exploration, Floating ice, Remote sensing, Greenland Sea.

42-2570
Influence of ice forces on the configuration and construction cost of arctic offshore structures.
Gulati, K.C., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.2, 1987, p.9-17, 6 refs.
Hadley, R.D., Howard, M.
Offshore structures, Ice loads, Ice solid interface, Design, Construction materials, Ice pressure, Cost analysis.

42-2571
Removable bottom-founded structure for iceberg-infested waters.
Beskow, R.H., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.2, 1987, p.19-30, 4 refs.
Dunn, P.J., Metcalf, M.F., Benoit, P.S.
Offshore structures, Sea ice distribution, Icebergs, Offshore drilling, Construction materials, Safety, Ice solid interface, Design.

42-2572
Multi-leg structures in sub-arctic seas.
Tatsuta, M., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.2, 1987, p.31-38, 4 refs.
Offshore structures, Sea ice distribution, Ice loads, Design, Ice conditions, Tests, Ice models, Wind factors, Ocean currents.

42-2573
Use of a 12-channel eel for shallow refraction surveying of ice-bearing sediments in the Canadian Beaufort Sea.
Fortin, G., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.3, 1987, p.281-288, 9 refs.
Good, R.L., Norminton, E.J., Hunter, J.A.
Subsea permafrost, Marine deposits, Seismic surveys, Ocean bottom, Seismic refraction, Marine geology, Beaufort Sea.

42-2574
Tools and techniques for manned submersible studies of sediment transport and ice scour on the eastern Canadian Continental Shelf.
Collins, W.T., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.3, 1987, p.289-294, 12 refs.
Parrott, D.R., Barrie, J.V., Imber, B.
Ice scoring, Sediment transport, Geophysical surveys, Soil erosion, Icebergs, Stability, Offshore structures, Equipment.

42-2575
New developments in east arctic offshore steels.
Hartikainen, H.O., Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.4, 1987, p.15-19, 10 refs.
Offshore structures, Steel structures, Offshore drilling, Design, Temperature effects, Plasticity tests, Strength.

42-2576
Wave attenuation in ice.
Rao, G.L., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.4, 1987, p.403-411, 10 refs.
Vandiver, J.K.
Ocean waves, Ice cover, Wave propagation, Attenuation, Mathematical models, Ice edge, Ice floes.

42-2577
Estimation of loads due to simultaneous occurrence of waves and iceberg impacts.
Bolen, Z.K., Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.4, 1987, p.413-416.
Ice loads, Offshore structures, Ocean waves, Icebergs, Impact strength, Design, Models, Loads (forces).

42-2578
Iceberg impact strength.
Johnson, R.C., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.4, 1987, p.417-423, 3 refs.
Benoit, J.R.
Ice loads, Impact strength, Ice pressure, Offshore structures, Icebergs, Ice conditions, Compressive properties, Equipment, Ice physics.

42-2579
Twisting-bending mode of ridge failure.
Gershunov, E.M., Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.4, 1987, p.425-432, 36 refs.
Ice loads, Offshore structures, Pressure ridges, Ice solid interface, Drift, Ice floes, Ice pressure, Models, Stresses.

42-2580
Measurement of arctic sea ice using impulse radar.
Paulley, T.A., et al, Offshore Technology Conference, 19th, Houston, TX, Apr. 27-30, 1987. Proceedings. Vol.4, 1987, p.433-441, 2 refs.
Gehrig, G.F., Oswald, G.K.A.
Ice cover thickness, Airborne radar, Radar echoes, Sea ice, Electromagnetic prospecting, Profiles, Ice floes, Tests, Remote sensing, Velocity.

42-2581
Modeling and prediction of geophysical processes. [Modelirovanie i prognozirovanie geofizicheskikh protsessov],
Arguchintsev, V.K., ed, Novosibirsk, Nauka, 1987, 199p., In Russian. For selected papers see 42-2582 through 42-2586. Refs. passim.
Dem'ianovich, N.I., ed, Konovalenko, Z.P., ed.
Shore erosion, Engineering geology, Mathematical models, Permafrost, Thermokarst, Frost heave, Slope processes, Baykal Amur railroad, Solifluction, Economic development, River basins.

42-2582
Exogenic geological processes in eastern Siberia and the problems of studying them. [Eksogennye geologicheskie protsessy Vostochnoĭ Sibiri i problemy ikh izucheniia],
Leshchikov, F.N., Modelirovanie i prognozirovanie geofizicheskikh protsessov (Modeling and prediction of geophysical processes) edited by V.K. Arguchintsev, N.I. Dem'ianovich and Z.P. Konovalenko, Novosibirsk, Nauka, 1987, p.9-16, In Russian. 17 refs.
Frost action, Permafrost weathering, Permafrost hydrology, Thermokarst, Frost heave, Slope processes, Solifluction, Permafrost thermal properties.

42-2583
Space-time variations of ground water runoff in the Angara-Lena artesian basin. [Prostranstvenno-vremennaia izmenchivost' podzemnogo stoka Angaro-Lenskogo artezianskogo basseina],
Shen'kman, B.M., Modelirovanie i prognozirovanie geofizicheskikh protsessov (Modeling and prediction of geophysical processes) edited by V.K. Arguchintsev, N.I. Dem'ianovich and Z.P. Konovalenko, Novosibirsk, Nauka, 1987, p.17-30, In Russian. 8 refs.
River basins, Artesian water, Permafrost distribution, Permafrost hydrology.

42-2584
Formation of shores of the Angara water reservoirs. [Formirovanie beregov angarskikh vodokhranilishch],
Pulisevskiĭ, G.M., et al, Modelirovanie i prognozirovanie geofizicheskikh protsessov (Modeling and prediction of geophysical processes) edited by V.K. Arguchintsev, N.I. Dem'ianovich and Z.P. Konovalenko, Novosibirsk, Nauka, 1987, p.39-46, In Russian. 2 refs.
Ovchinnikov, G.I.
Frost action, Shore erosion, Frost penetration, Slope processes, Frozen fines, Shoreline modification, Clays, Sands.

42-2585
Dynamics of seismic and electrical properties of ground during freeze-thaw. [Dinamika seismicheskikh i elektricheskikh svoĭstv gruntov pri ikh promerzanii i ottaivaniĭ],
Dzhurik, V.I., et al, Modelirovanie i prognozirovanie geofizicheskikh protsessov (Modeling and prediction of geophysical processes) edited by V.K. Arguchintsev, N.I. Dem'ianovich and Z.P. Konovalenko, Novosibirsk, Nauka, 1987, p.46-52, In Russian. 5 refs.
IUshkin, V.I., Popov, L.G.
Engineering geology, Measuring instruments, Mathematical models, Discontinuous permafrost, Earthquakes, Permafrost beneath structures, Permafrost forecasting, Freeze thaw cycles, Frost penetration, Elastic waves, Seismic velocity, Experimentation, Laboratory techniques, Frozen fines, Frozen sands, Gravel.

42-2586
Prognosis and climatic evaluation for economic development of large basins in the Baykal Amur railroad zone. [Prognozno-klimaticheskaia otsenka osvoeniia bol'shikh kotlovin v zone BAM],
Ladeĭshchikov, N.P., et al, Modelirovanie i prognozirovanie geofizicheskikh protsessov (Modeling and prediction of geophysical processes) edited by V.K. Arguchintsev, N.I. Dem'ianovich and Z.P. Konovalenko, Novosibirsk, Nauka, 1987, p.170-179, In Russian. 9 refs.
Mizandrontseva, K.N.
Economic development, Permafrost distribution, Discontinuous permafrost, Baykal Amur railroad, River basins, Valleys.

42-2587
Service experience with sterntube bearings of the icebreaker *Lenin*. [Opyt ekspluatatsii dеĭdvudnykh podshipnikov ledokola "Lenin"],
Babanin, V.F., et al, *Sudostroenie,* Nov. 1987, No.11, p.48-51, In Russian. 9 refs.
Sokov, E.V.
Propellers, Icebreakers, Ice navigation, Engines, Performance, Ice breaking.

42-2588
Operating experience with ice-going ships. [Opyt ekspluatatsii sudov ledovogo plavaniia],
Barabanov, N.V., et al, *Sudostroenie,* Dec. 1987, No.12, p.3-6, In Russian. 6 refs.
Babtsev, V.A.
Sea ice distribution, Ice navigation, Ships, Damage, Countermeasures, Design.

42-2589
Improving the ice-going capability of the icebreaker *Mudyug*. [Uluchshenie ledoprokhodimosti ledokola "Mud'iug"],
Zakharov, B.N., et al, *Sudostroenie,* Dec. 1987, No.12, p.6-10, In Russian. 2 refs.
Petrakov, E.V.
Icebreakers, Design, Ice navigation, Ice cutting, Sea ice distribution, Ice cover thickness.

42-2590
Technological effectiveness of building icebreakers with new hull forms. [Tekhnologichnost' postroĭki ledokolov s novymi formami obvodov],
Vasil'ev, A.A., et al, *Sudostroenie,* Jan. 1988, No.1, p.32-34, In Russian.
Kashtelian, V.I., Kuklin, O.S.
Icebreakers, Construction materials, Design, Ice navigation.

42-2591
Determining the ultimate bending strength of ice in the spring. [O metodike opredeleniia predela prochnosti l'da na izgib v vesennīĭ period],
Fomichev, B.S., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.10, p.80-83, In Russian. 6 refs.
Ice cover strength, Ice cover thickness, Ice elasticity, Ice temperature, Elastic properties, Tests.

42-2592
Preparation of road ditches for winter operation. [Podgotovka gruntovykh pritrassovykh kar'erov k ekspluatatsii v zimnīĭ period],
Migliachenko, V.P., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1987, No.10, p.99-103, In Russian. 2 refs.
Roads, Trenching, Winter maintenance, Construction equipment, Construction, Frozen ground, Excavation.

42-2593
To the North Pole. On the 10th anniversary of the a/s *Arktika* voyage to the Pole.
Kurnosov, M., *Soviet shipping,* 1987, 7(3), p.20-21.
Ships, Expeditions, Ice navigation, Sea ice distribution, Icebreakers, Ice breaking, Polar regions.

42-2594
Ice experiment of Mudyug icebreaker is over.
Mikhallichenko, V., *Soviet shipping,* 1987, 7(3), p.36-37.
Ice cutting, Ice navigation, Icebreakers, Tests, Design.

42-2595
Arctic shipping: strategy of development.
Arikaĭnen, A., *Soviet shipping,* 1987, 7(4), p.20-23.
Ships, Ice navigation, Icebreakers, Ice breaking, Northern Sea Route.

42-2596
Not only the power (problems of icebreaker design). [Ne tol'ko moshchnost' (O problemakh ledokolostroeniia)],
Mikhallichenko, V., *Morskoĭ flot,* 1988, No.1, p.23-27, In Russian.
Icebreakers, Design, Ice navigation.

42-2597
Air-guide needs help. [Vozdushnyĭ povodyr' nuzhdaetsia v pomoshchi],
Burkov, G., *Morskoĭ flot,* 1988, No.1, p.34-37, In Russian.
Aerial surveys, Ice surveys, Helicopters, Airborne equipment, Ice navigation, Icebreakers, Expeditions, Airplanes, Polar regions, Arctic Ocean.

42-2598
Forecasting the efficiency of caterpillar rippers in frozen ground. [Prognozirovanie proizvoditel'nosti gusenichnykh rykhliteleĭ na razrabotke merzlykh gruntov],
Kaliuzhnyĭ, M.I., et al, *Mekhanizatsiia stroitel'stva,* Dec. 1987, No.12, p.17, In Russian. 2 refs.
Surikov, V.V.
Construction equipment, Excavation, Forecasting, Frozen ground, Mathematical models.

42-2599
Antarctic earthquakes.
Adams, R.D., *Nature,* Feb. 25, 1988, 331(6158), p.665, 4 refs. For the item being critiqued see 42-1144 (F-36587).
Ice sheets, Earthquakes.
A critique is made of a prior report which could have been interpreted to mean that no earthquakes had occurred in interior Antarctica. Occurrences of such earthquakes are pointed out showing their locations, the antarctic stations which recorded the events, and the search methods used to locate the events.

42-2600
CO2 record in the Byrd ice core 50,000-5,000 years BP.
Neftel, A., et al, *Nature,* Feb. 18, 1988, 331(6157), p.609-611, 21 refs.
Oeschger, H., Staffelbach, T., Stauffer, B.
Ice cores, Gas inclusions, Carbon dioxide, Antarctica—Byrd Station.
Analysis of air in polar ice cores revealed 30% lower CO2 values during glacial periods than during interglacial periods. At present this is confirmed by results from six different ice cores, two from Greenland and four from Antarctica. In all cores the CO2 change coincides with the change in the isotopic composition of the ice, expressed as either the *delta*O-18 or *delta*D ratio; both are indicators for the mean annual surface temperature. A great number of samples have been studied from the deep ice core from Byrd Station, drilled in 1968. These measurements allow the reconstruction of the atmospheric CO2 concentration in the specified time period in great detail. (Auth.)

42-2601
Information on past solar activity and geomagnetism form Be-10 in the Camp Century ice core.
Beer, J., et al, *Nature,* Feb. 25, 1988, 331(6158), p.675-679, 38 refs.
Ice cores, Solar activity, Geomagnetism, Greenland—Camp Century.

42-2602
Enclathration of helium in ice II: the first helium hydrate.
Londono, D., et al, *Nature,* Mar. 10, 1988, 332(6160), p.141-142, 15 refs.
Kuhs, W.F., Finney, J.L.
High pressure ice, Gas inclusions, Hydrates.

42-2603
Extreme O-18 depletion in calcite and chert clasts from the Elephant Moraine on the east antarctic ice sheet.
Faure, G., et al, *Nature,* Mar. 24, 1988, 332(6162), p.352-354, 19 refs.
Ice sheets, Glacial geology, Rocks, Radioactive isotopes, Antarctica—Victoria Land.
Two large moraines are presently forming near the margin of the east antarctic ice sheet west of Victoria Land where the flow of the ice sheet is disturbed by subglacial bedrock ridges of the Transantarctic Mountains. During the 1983-84 search for meteorites in this area several clasts, composed of black acicular calcite crystals, were collected from the Elephant Moraine (76.3S; and 157.3E) where they are ablating out of the ice. Additional samples of this calcite were later collected from tae Elephant Moraine during the 1984-85 and 1986-87 field seasons, but none was found at the Reckling Moraine at 76.2S and 158.7E. The calcite clasts are strongly depleted in O-18 and in C-13 in addition to being enriched in radiogenic SR-87 relative to sea water. These results suggest that the calcite precipitated from aqueous solutions discharged by hotsprings under the east antarctic ice sheet. (Auth. mod.)

42-2604
Methods and means of processing satellite data on parameters of natural media. Series V. [Metody i sredstva obrabotki aerokosmicheskikh dannykh o parametrakh prirodnoĭ sredy. Seriia V],
Karasev, A.B., ed, *Leningrad. Gosudarstvennyĭ nauchno-issledovatel'skiĭ tsentr izucheniia prirodnykh resursov. Trudy,* 1987, Vol.29, 176p., In Russian. For selected papers see 42-2605 and 42-2606. Refs. passim.
Snow surveys, Aerial surveys, Route surveys, Snow cover distribution, Snow surface, Measuring instruments, Spaceborne photography, Data processing.

42-2605
Studying snow cover over flatlands by remote sensing. [Issledovanie snezhnogo pokrova ravninnykh raĭonov kak ob"ekta distantsionnogo zondirovaniia],
Kariagin, P.M., et al, *Leningrad. Gosudarstvennyĭ nauchno-issledovatel'skiĭ tsentr izucheniia prirodnykh resursov. Trudy,* 1987, Vol.29, p.50-56, In Russian. 8 refs.
Mordvintsev, I.N., Penina, I.V.
Snow surveys, Remote sensing, Route surveys, Snow cover distribution, Snow surface, Data processing.

42-2606
Using the space-data base technique of numerical processing in determining snow cover distribution and comparing the results with overland measurements. [Ispol'zovanie bazovoĭ metodiki tsifrovoĭ obrabotki dlia opredeleniia stepeni zasnezhennosti i sravnenie etikh dannykh s nazemnymi izmereniiami],
Asmus, V.V., et al, *Leningrad. Gosudarstvennyĭ nauchno-issledovatel'skiĭ tsentr izucheniia prirodnykh resursov. Trudy,* 1987, Vol.29, p.57-72, In Russian. 6 refs.
Plains, Snow cover distribution, Remote sensing, Snow surveys, Spaceborne photography, Measuring instruments, Data processing.

42-2607
Liquid sampler.
Rand, J.H., *U.S. Patent Office. Patent,* Aug. 31, 1982, MP 2334, 4 col., USP-4,346,612, 10 refs.
Unfrozen water content, Frazil ice, Samplers, Measuring instruments, Design.

42-2608
Collapsible restraint for measuring tapes.
Ueda, H.T., *U.S. Patent Office. Patent,* Mar. 8, 1983, MP 2335, 12 col., USP-4,375,721, 19 refs.
Ice cover thickness, Measuring instruments, Boreholes, Design.

42-2609
Protection of plants against frost injury using nucleation-inhibiting species-specific bacteriophages.
Kozloff, L.M., et al, *U.S. Patent Office. Patent,* Mar. 8, 1983, 10 col., USP-4,375,734, 2 refs.
Schnell, R.C.
Plants (botany), Frost protection, Bacteria, Countermeasures, Damage, Frost resistance, Ice nuclei.

42-2610
Apparatus and method for measuring concentrations of supercooled liquid water.
Hill, G.E., et al, *U.S. Patent Office. Patent,* Apr. 10, 1984, 18 col., USP-4,441,363, 8 refs.
Woffinden, D.S., Chadwick, D.G.
Unfrozen water content, Supercooled clouds, Vibration, Monitors, Measuring instruments, Ice accretion.

42-2611
Apparatus for inserting a flexible bag into a fluid transmission line.
Brister, B.D., *U.S. Patent Office. Patent,* Apr. 9, 1985, 14 col., USP-4,509,343, 8 refs.
Motor vehicles, Freezing, Liquid cooling, Cold weather operation, Leakage, Countermeasures, Maintenance, Freeze thaw cycles, Equipment.

42-2612
Apparatus and method of cooling using stored ice slurry.
Ludwigsen, J.S., et al, *U.S. Patent Office. Patent,* Apr. 9, 1985, 10 col., USP-4,509,344, 11 refs.
Ludwigsen, J.L., Gallagher, T.A.
Liquid cooling, Storage tanks, Freeze thaw cycles, Phase transformations, Equipment, Heat transfer.

42-2613
Modular island drilling system.
Wetmore, S.B., *U.S. Patent Office. Patent,* Apr. 16, 1985, 40 col., USP-4,511,288, 32 refs.
Offshore structures, Offshore drilling, Ice conditions, Ice loads, Reinforced concretes, Cellular materials.

42-2614
Mobile offshore structure for arctic exploratory drilling.
Hale, D.R., et al, *U.S. Patent Office. Patent,* Apr. 23, 1985, 10 col., USP-4,512,684, 12 refs.
Owen, W.A., Orndorff, J.A., Jr., Ellyn, G.
Offshore structures, Offshore drilling, Floating structures, Ice loads, Exploration, Ocean bottom, Bearing strength.

42-2615
Piling protector.
Cosenza, M., *U.S. Patent Office. Patent,* Apr. 23, 1985, 4 col., USP-4,512,683, 8 refs.
Pile extraction, Ice loads, Linings, Protection, Countermeasures, Cellular plastics.

42-2616
Snow plow scoop.
Leininger, G., et al, *U.S. Patent Office. Patent,* Apr. 23, 1985, 4 col., USP-4,512,091, 10 refs.
Spector, G.
Snow removal, Design.

42-2617
Thermal protection apparatus.
Bennett, G.A., et al, *U.S. Patent Office. Patent,* Apr. 23, 1985, 4 col., USP-4,513,352, 10 refs.
Elder, M.G., Kemme, J.E.
Thermal insulation, Borehole instruments, Heat pipes, Geothermy, Heat transfer, Ice thermal properties, Heat sinks, Protection.

42-2618
Method of heat treating steel wire.
Nigol, O., et al, *U.S. Patent Office. Patent,* Apr. 30, 1985, 8 col., USP-4,514,237, 7 refs.
Barrett, J.S.
Steel structures, Transmission lines, Ice loads, Strength, Thermal effects.

42-2619
Fall velocity indicator/viewer.
Berthel, R.O., et al, *U.S. Patent Office. Patent,* Apr. 30, 1985, 8 col., USP-4,514,758, 14 refs.
Plank, V.G., Jones, S.H., Matthews, A.J.
Snowflakes, Snowfall, Snow physics, Measuring instruments, Velocity, Monitors, Photography.

42-2620
Ice monitoring system using neutron moderation.
Skala, S.F., *U.S. Patent Office. Patent,* Feb. 24, 1987, 4 col., USP-4,646,068, 4 refs.
Aircraft icing, Neutrons, Ice detection, Hydrogen, Monitors.

42-2621
Traction devices for automotive wheels.
Ziccardi, P., et al, *U.S. Patent Office. Patent,* Feb. 17, 1987, 8 col., USP-4,643,251, 3 refs.
Ziccardi, J.
Traction, Vehicle wheels, Snow cover effect, Ice cover effect, Mud, Electromagnetic properties.

42-2622
Method of adding propulsive force to ice breaker.
Gohdo, S., *U.S. Patent Office. Patent,* Feb. 17, 1987, 4 col., USP-4,643,121, 10 refs.
Icebreakers, Ice breaking, Ice strength, Sea ice, Velocity, Time factor.

42-2623
Underwater icewalker.
Austin, M., *U.S. Patent Office. Patent,* Feb. 17, 1987, 6 col., USP-4,642,932, 5 refs.
Ice bottom surface, Mechanical tests, Floating structures.

42-2624
Method and apparatus for splitting ice masses.
Page, R.D., *U.S. Patent Office. Patent,* Feb. 3, 1987, 8 col., USP-4,640,552, 22 refs.
Ice breakup, Boreholes, Drills, Pressure, Fracturing.

42-2625
Occurrence of an isoprenoid C25 diunsaturated alkene and high neutral lipid content in antarctic sea-ice diatom communities.
Nichols, P.D., et al, *Journal of phycology,* Mar. 1988, 24(1), p.90-96, 44 refs.
Sea ice, Algae, Cryobiology, Antarctica—McMurdo Sound.
The lipid and hydrocarbon composition of natural populations of diatom communities collected during the austral spring bloom of 1985 in the sea-ice at McMurdo Sound was analyzed. Sea-ice diatom communities were dominated by *Amphiprora* sp., *Nitzschia stellata* Manguin and *Berkeleya* sp. at Cape Armitage; *N. stellata, Amphiprora, Pleurosigma, N. Kerguelensis* (O'Meara) Hasle and some small centric diatoms adjacent to the Erebus Ice Tongue; and *Porosira pseudodenticulata* (Hustedt) Jouse at Wohlachiag Bay. Lipid distributions of the sea-ice diatom communities from the Cape Armitage and Erebus sites were characterized by high concentrations of triacylglycerol. A hydrocarbon common in temperate diatoms, and an isoprenoid C25 diunsaturated alkene were the dominant hydrocarbons detected at these two sites. Hydrogenation of the C25 diene produced the known alkane 2, 6, 10, 14-tetramethyl-7-(3-methylpentyl)-pentadecane. The C25 diene is one of several structurally related hydrocarbons reported in many estuarine, coastal and oceanic sediments. It is proposed that certain species of diatoms are a likely source of these alkenes in sediments. (Auth. mod.)

42-2626
Remote sensing of drained ice areas around the breathing holes of ice-inhabiting seals.
Digby, S.A., *Canadian journal of zoology,* June 1984, 62(6), p.1011-1014, With French summary. 15 refs.
Fast ice, Ice melting, Drainage, Remote sensing, Animals.

42-2627
Free boundary problem associated with icing in a channel.
Friedman, A., et al, *Nonlinear analysis, theory, methods and applications,* Apr. 1987, 11(4), p.501-526, 10 refs.
Stojanovic, S.
Boundary value problems, Icing, Channels (waterways).

42-2628
Observations of the preferential loss of major ions from melting snow and laboratory ice.
Brimblecombe, P., et al, *Water research,* Oct. 1987, 21(10), p.1279-1286, 26 refs.
Snow melting, Snow composition, Ice melting, Ice composition, Ions.

42-2629
Applications of geophysical methods to resource development in northern Canada.
LaFlèche, P.T., et al, *Canadian Institute of Mining and Metallurgy. Bulletin,* Sep. 1987, 80(905), p.78-87, 18 refs.
Judge, A.S., Taylor, A.E.
Natural resources, Economic development, Well logging, Geophysical surveys, Mines (excavations), Permafrost distribution, Soil temperature, Profiles.

42-2630
Remote-sensing studies of landscapes. [Distantsionnye issledovaniia landshaftov],
Isaev, A.S., et al, Novosibirsk, Nauka, 1987, 198p., In Russian with English table of contents enclosed. Refs. p.183-197.
IAnshin, A.L., ed, Solov'ev, V.A., ed.
Aerial surveys, Geological maps, Spacecraft, Geological surveys, Monitors, Geologic processes, Remote sensing, Geologic structures, Geocryology, Glaciology, Geobotanical interpretation, Forestry, Geography, Geomorphology.

42-2631
Ways of efficient utilization of the soil, vegetational and animal resources of Siberia: proceedings of the conference dedicated to the 50th anniversary of the biologic-pedological faculty of the Tomsk University. [Puti ratsional'nogo ispol'zovaniia pochvennykh, rastitel'nykh i zhivotnykh resursov Sibiri: materialy konferentsii posviashchennoi 50-letiiu biologo-pochvennogo fakul'teta Tomskogo universiteta],
Ioganzen, B.G., ed, Tomsk, Universitet, 1986, 209p., In Russian. For selected paper see 42-2632.
Cryogenic soils, Vegetation, Plant ecology, Plant physiology, Ecosystems, Tundra, Forest tundra, Taiga, Swamps, Arctic landscapes, Subarctic landscapes.

42-2632
Specific characteristics of soil formation in the central taiga of the Tomsk area of the Ob' River region. [Spetsifika pochvoobrazovaniia v srednei taige Tomskogo Priob'ia],
Geras'ko, L.I., et al, Puti ratsional'nogo ispol'zovaniia pochvennykh, rastitel'nykh i zhivotnykh resursov Sibiri: materialy konferentsii posviashchennoi 50-letiiu biologo-pochvennogo fakul'teta Tomskogo universiteta. (Ways of efficient utilization of the soil, vegetational and animal resources of Siberia: proceedings of the conference dedicated to the 50th anniversary of the biologic-pedological faculty of the Tomsk University). Edited by B.G. Ioganzen, Tomsk, Universitet, 1986, p.43-45, In Russian.
Pologova, N.N.
Paludification, Cryogenic soils, Podsol, Soil formation, Peat, Soil composition, Hydrothermal processes, Soil chemistry, Soil profiles, Tundra, Forest tundra, Taiga.

42-2633
Geology and mineral deposits of eastern Siberia. Summaries of reports for the Regional Scientific Conference. [Geologiia i poleznye iskopaemye Vostochnoi Sibiri (tezisy dokladov k regional'noi nauchnoi konferentsii)],
Mandel'baum, M.M., ed, Irkutsk, 1985, 138p., In Russian. For selected paper see 42-2634.
Permafrost distribution, Permafrost hydrology, Thermokarst, Distribution, Topographic features, Tectonics.

42-2634
Effect of neotectonics on the development of karst in the cryolithozone (the case of western Yakutia). [Vliianie neotektoniki na razvitie karsta kriolitozony (na primere Zapadnoi IAkutii)],
Filippov, A.G., Geologiia i poleznye iskopaemye Vostochnoi Sibiri. Tezisy dokladov k regional'noi nauchnoi konferentsii (Geology and mineral deposits of eastern Siberia. Summaries of reports for the Regional Scientific Conference) edited by M.M. Mandelbaum, Irkutsk, 1985, p.80-82, In Russian.
Permafrost distribution, Permafrost hydrology, Thermokarst, Distribution, Topographic features, Tectonics.

42-2635
CRREL Hopkinson bar apparatus.
Dutta, P.K., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Dec. 1987, SR 87-24, 29p., ADA-190 599, 21 refs.
Farrell, D., Kalafut, J.
Ice strength, Frozen ground strength, Measuring instruments, Ice crystal structure, Low temperature tests, Brittleness, Dynamic loads, Construction materials, Impact strength.
Most materials at low temperatures change their modulus and tend to become brittle. When using these materials in structural components that are likely to be subjected to impact it is important to understand their behavior at low temperatures under dynamic loading. The CRREL split Hopkinson Test Bar was designed and set up to conduct compressive strain rate tests (up to 1000 strains/s, i.e., in./in/ per s) at low temperatures (down to -100 C). The results provide dynamic stress-strain relationships of materials at low temperatures by considering the transmission of the stress wave through a test specimen sandwiched between two elastic bars. The specimen is contained in a liquid-nitrogen-operated cooling environment.

During the test an elastic striker impacts the bar; as a result a stress wave passes down the bar. At the specimen a part of the wave is reflected and the rest is transmitted to the second bar. Strain gauges mounted on the bars record the wave shapes, which are analyzed to obtain the dynamic stress-strain relationships. The test bars are 1-1/2 in. in diameter and each is 8 ft. long. The apparatus is suitable for testing light metals, plastics, composites, rocks, ice, and frozen soil. The data acquisition and analysis system are completely automatic, using software developed at CRREL, so the system provides for a rapid and low-cost method for high strain rate behavior studies of materials.

42-2636
Meteorological conditions for dust formation on tailings. [Meteorologicheskie usloviia pyleobrazovaniia na khvostokhranilishche],
Talalaev, S.M., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy,* 1986, Vol.502, p.101-108, In Russian. 5 refs.
Mining, Excavation, Tailings, Dust, Seasonal variations, Snow cover effect, Air pollution.

42-2637
Spectral measurements in a disturbed boundary layer over snow.
Andreas, E.L., *U.S. Army Cold Regions Research and Engineering Laboratory,* Nov. 1987, CR 87-21, 41p., ADA-190 217, Refs. p.37-41.
Snow cover effect, Spectra, Boundary layer, Surface temperature, Turbulent flow, Humidity.
The author measured time series of longitudinal *(u)* and vertical *(w)* velocity and temperature *(t)* and humidity *(q)* fluctuations with fast-responding sensors in the near-neutrally stable surface layer over a snow-covered field. These series yielded individual spectra and *u-w, w-q* and *t-q* cospectra, phase spectra and coherence spectra for nondimensional frequencies *(fz/U)* from roughly 0.001 to 10. This is, thus, one of the most extensive spectral sets ever collected over a snow-covered surface. With the exception of the *u-w* cospectra, all of the spectra and cospectra displayed the expected dependence on frequency in an inertial or inertial-convective subrange. All, however, contained significantly more energy at low frequency than the Kansas neutral-stability spectra and cospectra. This excess low-frequency energy and the erratic behavior of the *u-w* cospectra imply that the forested hills bordering the site on two sides were producing disturbances in the flow field at scales roughly equal to the height of the hills, 100 m. The phase and coherence spectra suggest that internal gravity waves were also frequently present, since the atmospheric boundary layer generally had slightly stable stratification. Consequently, at this complex site, turbulence alone determines the spectra and cospectra at high frequency; at low frequency the spectra and cospectra reflect a combination of topographically generated turbulence and internal waves. From the measured temperature and humidity spectra and the *t-q* cospectra, the author computed refractive index spectra for light of 0.55-micron and millimeter wavelengths, the first such spectra obtained over snow.

42-2638
Effects of frost on shaded and exposed spruce and pine seedlings planted in the field.
Lundmark, T., et al, *Canadian journal of forest research,* Oct. 1987, 17(10), p.1197-1201, With French summary. 24 refs.
Hällgren, J.-E.
Plant physiology, Trees (plants), Frost resistance, Revegetation.

42-2639
Climatic change: a review of causes.
Harrington, J.B., *Canadian journal of forest research,* Nov. 1987, 17(11), p.1313-1339, With French summary. Refs. p.1334-1339.
Climatic changes, Human factors, Ice age theory, Forestry.

42-2640
Performance in freezing tests and field experiments of full-sib families of *Pinus sylvestris* (L.).
Nilsson, J.E., et al, *Canadian journal of forest research,* Nov. 1987, 17(11), p.1340-1347, With French summary. 21 refs.
Andersson, B.
Plant physiology, Trees (plants), Frost resistance, Revegetation.

42-2641
Static and dynamic behavior of mechanical components associated with electrical transmission lines: II.
Trainor, P.G.S., et al, *Shock and vibration digest,* Nov. 1986, 18(11), p.9-17, 60 refs.
Popplewell, N., Shah, A.H., Wong, C.K.
Power line icing, Ice loads, Transmission lines.

42-2642
Peculiarities of air supply to diesel engines in icebreakers. [Osobennosti vozdukhosnabzheniia dizelei na ledokolakh],
Chernen'kii, V.A., *Sudostroenie,* Feb. 1988, No.2, p.28-30, In Russian. 5 refs.
Icebreakers, Diesel engines, Design.

42-2643
Ice forces on offshore structures on the shelf. [Vozdeistvie l'da na morskie sooruzheniia shel'fa],
Tupolev, A.A., ed, *Itogi nauki i tekhniki. Seriia Vodnyi transport,* 1988, Vol.13, 221p., In Russian with English table of contents enclosed. 315 refs.
Ice physics, Ice breaking, Pressure ridges, Offshore structures, Models, Ice pressure, Ice loads, Sea ice, Ice breakup, Ice cover thickness.

42-2644
Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1. [Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1],
Telger, A., ed, Tallin, Valgus, 1987, 248p., In Russian. For selected summaries see 42-2645 through 42-2656.
Kivi, A., ed.
Lightweight concretes, Cellular concretes, Concrete aggregates, Porosity, Capillary ice, Concrete freezing, Frost shattering, Frost resistance.

42-2645
Some aspects of frost resistance of autoclaved materials. [O nekotorykh aspektakh morozostoikosti avtoklavnykh materialov],
Pinsker, V.A., Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.204-207, In Russian. 17 refs.
Concretes, Capillary ice, Concrete freezing, Concrete aggregates, Frost resistance, Frost shattering, Porosity.

42-2646
Changes in the viscous deterioration of cellular, water saturated silicate concrete during ice formation. [Izmenenie viazkosti razrusheniia vodonasyshchennogo silikatnogo iacheistogo betona pri l'doobrazovanii],
Chernyshov, E.M., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.208-210, In Russian.
D'iachenko, E.I.
Construction materials, Mechanical properties, Frost shattering, Porosity, Ice formation, Cellular concretes, Lightweight concretes.

42-2647
Methods of determining frost resistance. [O metodike opredeleniia morozostoikosti],
Amkhanitskii, G.IA., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.211-213, In Russian.
Bekisheva, L.K.
Construction materials, Lightweight concretes, Cellular concretes, Frost resistance, Tests.

42-2648
New method of determining the brand of materials designed for external enclosures, according to their frost resistance. [Novyi metod opredeleniia marki po morozostoikosti materialov dlia naruzhnykh ograzhdaiushchikh konstruktsii],
Aleksandrovskii, S.V., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.214-217, In Russian.
Shtan'ko, A.E., Guzikov, M.N.
Concrete aggregates, Frost resistance, Construction materials, Tests.

42-2649
Instrument for quick evaluation of frost resistance. [Pribor dlia ekspressnoi otsenki morozostoikosti],
Dikun, A.D., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.218-221, In Russian.
Kudriavtsev, G.F.
Concretes, Frost resistance, Measuring instruments, Design.

42-2650
Using regression analysis in clarifying the effect of separate parameters on qualitative and operational indices of autoclaved, slate-ash cellular concrete. [Ispol'zovanie regressionnogo analiza dlia vyiasneniia vliianiia otdel'nykh parametrov na kachestvennye i ekspluatatsionnye pokazateli avtoklavnogo slantsevozol'nogo gazobetona],
Galibina, E.A., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.222-227, In Russian. 1 ref.
Kremerman, T.B., Veretevskaia, I.A.
Lightweight concretes, Cellular concretes, Cements, Concrete aggregates, Concrete strength, Frost resistance.

42-2651
Studies of the frost resistance of gas-silicate concrete. [Issledovanie morozostoikosti gazosilikata],
Eskusson, K.K., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.228-231, In Russian. 1 ref.
Eskusson, I.IU., Kil'kson, A.E.
Cements, Concrete freezing, Freeze thaw cycles, Concrete aggregates, Sands, Concrete strength, Frost resistance, Lightweight concretes, Tests.

42-2652
Frost resistance of cellular concrete containing alkali-ash cements. [Morozostoikost' iacheistogo betona na shchelochezol'nom viazhushchem],
Bagrov, B.O., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.232-234, In Russian.
Vasil'eva, T.D.
Concrete aggregates, Lightweight concretes, Concrete strength, Cellular concretes, Frost resistance, Cements, Chemical composition.

42-2653
Service life of materials composed of ash-zeolite compounds. [Dolgovechnost' materialov iz zolotseolitnykh kompozitsii],
Ovcharenko, G.I., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.235-237, In Russian. 3 refs.
Kozlova, V.K., Sviridov, V.L., Karakulov, V.M.
Concretes, Concrete aggregates, Chemical composition, Frost resistance, Concrete admixtures, Concrete freezing, Concrete strength.

42-2654
Influence of slack-fired ashes on frost resistance of concretes. [Vliianie nedozhoga v zolakh na morozostoikost' betona],
Bazhenov, IU.M., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.238-241, In Russian. 1 ref.
Vysotskaia, O.B., Danilovich, I.IU.
Concrete aggregates, Cements, Frost resistance, Concrete freezing, Concrete strength.

42-2655
Increasing the service life of cellular concretes. [Povyshenie dolgovechnosti iacheistykh betonov],
Shelkin, A.E., et al, Dolgovechnost' konstruktsii iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoi konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.242-244, In Russian.
Dobshits, L.M., Baranov, A.T.
Lightweight concretes, Cellular concretes, Concrete admixtures, Frost resistance, Porosity, Ice formation.

42-2656
Water absorption and frost resistance of cellular concretes saturated with organosilicon materials. [Vodopogloshchenie i morozostoĭkost' iacheistykh betonov propitannykh kremnĭorganicheskimi materialami],
Gurevich, N.I., et al, Dolgovechnost' konstruktsiĭ iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoĭ konferentsii, Chast' 1 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 1) edited by A. Telger and A. Kivi, Tallin, Valgus, 1987, p.245-248, In Russian. 3 refs.
Nikitin, M.K., Konorev, V.A.
Lightweight concretes, Cellular concretes, Saturation, Waterproofing, Frost resistance.

42-2657
Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 2. [Dolgovechnost' konstruktsiĭ iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoĭ konferentsii, Chast' 2],
Telger, A., ed, Tallin, Valgus, 1987, 247p., In Russian. For selected summaries see 42-2658 through 42-2661.
Abo, L., ed.
Concrete structures, Lightweight concretes, Cellular concretes, Concrete aggregates, Concrete freezing, Frost resistance, Walls, Buildings, Thermal regime, Heat transfer, Moisture transfer.

42-2658
Thermal characteristics of external walls built of cellular concrete panels, under service conditions. [Issledovanie teplovykh kharakteristik naruzhnykh sten iz iacheisto-betonnykh stenovykh paneleĭ v ekspluatatsionnykh usloviiakh],
Zhudov, V.F., et al, Dolgovechnost' konstruktsiĭ iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoĭ konferentsii, Chast' 2 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 2) edited by A. Telger and L. Abo, Tallin, Valgus, 1987, p.85-88, In Russian.
Popov, V.V., Davidenko, V.P.
Concrete structures, Prefabrication, Panels, Lightweight concretes, Cellular concretes, Heat flux, Heat loss, Air temperature, Measuring instruments.

42-2659
Ways of improving the properties of gas-ash-concrete walls. [Ekspluatatsionnye svoĭstva gazozolobetonnykh sten i puti ikh uluchsheniia],
Zlatinskaia, T.V., et al, Dolgovechnost' konstruktsiĭ iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoĭ konferentsii, Chast' 2 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 2) edited by A. Telger and L. Abo, Tallin, Valgus, 1987, p.89-92, In Russian. 3 refs.
Tsyss, A.A.
Lightweight concretes, Tests, Walls, Residential buildings, Prefabrication, Panels, Frost resistance.

42-2660
Building enclosures with specified reliability level of thermal protection and service life. [Ograzhdaiushchie konstruktsii zdaniĭ s zadannym urovnem nadezhnosti ikh teplozashchitnykh svoĭstv i dolgovechnosti],
[Asin, IU.D., Dolgovechnost' konstruktsiĭ iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoĭ konferentsii. Chast' 2 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 2) edited by A. Telger and L. Abo, Tallin, Valgus, 1987, p.118-121, In Russian. 3 refs.
Mathematical models, Buildings, Walls, Heat transfer, Heat loss, Moisture transfer.

42-2661
Dependence of thermophysical properties of autoclaved cellular concretes on their density, humidity and the amount of cryophase. [Zavisimost' teplofizicheskikh svoĭstv avtoklavnykh iacheistykh betonov ot ikh plotnosti, vlazhnosti i kolichestva kriofazy],
[Asin, IU.D., et al, Dolgovechnost' konstruktsiĭ iz avtoklavnykh betonov. Tezisy dokladov VI Respublikanskoĭ konferentsii, Chast' 2 (Service life of structures built of autoclaved concretes. Summaries of reports presented at the 6th Republican conference. Part 2) edited by A. Telger and L. Abo, Tallin, Valgus, 1987, p.135-138, In Russian. 2 refs.
Kuznetsova, N.N.
Concrete structures, Walls, Buildings, Humidity, Porosity, Mathematical models, Heat transfer, Computer applications.

42-2662
Fabrics of the ice cores from BHQ on Law Dome ice cap, Antarctica.
Li, J., et al, *Kexue Tongbao*, Feb. 1988, 33(3), p.216-220, 4 refs.
Xie, Z., Hwang, M.
Glacier ablation, Ice cores, Ice crystal size, Ice microstructure, Antarctica—Law Dome.
Investigation of antarctic glaciers by Chinese researchers began in 1982 at Law Dome ice cap in the north of Wilkes Land, East Antarctica. In the ablation zone along the margin of the ice cap, melting takes place in summer, where the mean air temperature in Jan. is above 0 C; no melting can be seen in the recrystallization zone at Dome Summit. In 1983, several ice cores from the 430 m depth level on Law Dome were sent to China for analysis in detail. In this article, their microstructure and ice crystal orientation fabric are discussed. The core is divided into three layers, as follows: the deposition layer (upper 160 m), where the changes are mainly in the shape and size of ice crystals; the transition layer (160-300 m), where the fabric pattern variation is unstable; and the deep layer (below 300 m), with the greatest crystal size fluctuation. (Auth. mod.)

42-2663
Après ski le déluge.
Simons, P., *New scientist*, Jan. 14, 1988, 117(1595), p.49-52.
Human factors, Environmental impact, Damage, Avalanches, Slope processes.

42-2664
Gas hydrates keep energy on ice.
Ridley, I., et al, *New scientist*, Feb. 25, 1988, 117(1601), p.53-58.
Dominic, K.
Hydrates, Permafrost, Subsea permafrost.

42-2665
Holocene history of the forest-alpine tundra ecotone in the Scandes Mountains (central Sweden).
Kullman, L., *New phytologist*, Jan. 1988, 108(1), p.101-110, 76 refs.
Forest tundra, Alpine tundra, Sweden—Scandes Mountains.

42-2666
Dynamics of Bjerrum faults and protonic ice conductivity.
Sergienko, S.I., *Physica status solidi. Part B*, Dec. 1987, 144(2), p.471-475, 13 refs.
Ice electrical properties, Electrical resistivity, Water structure, Molecular structure.

42-2667
Investigation of the added mass phenomenon with a flexible model of the *M.V. Arctic*: Vols. 1, 2 and 3.
Menon, B.C., et al, *Transport Canada. Report*, Mar. 1987, TP 8797E, 3 vols., With French summaries. Refs. passim.
Howard, D.J., Phillips, L.D.
Ice navigation, Icebreakers, Damping, Ice conditions, Tests, Hydrodynamics, Models, Mass balance, Flexural strength, Analysis (mathematics), Impact strength.

42-2668
Solid aqueous solutions.
Klinger, J., NATO Advanced Study Institute on the Physics and Chemistry of Aqueous Ionic Solutions, Cargese, Corsica, France, June 22-July 5, 1986. Proceedings. Edited by M.-C. Bellissent-Funel and G.W. Neilson, NATO ASI Series. Series C: Mathematical and physical sciences, Vol.205, Dordrecht, Holland, D. Reidel, 1987, p.441-446, 23 refs.
DLC QD543.N38 1986
Freezing, Solutions, Ions, Ice growth, Ice physics, Molecular structure, Impurities.

42-2669
Vitrification and crystallization of water.
Dupuy, J., et al, NATO Advanced Study Institute on the Physics and Chemistry of Aqueous Ionic Solutions, Cargese, Corsica, France, June 22-July 5, 1986. Proceedings. Edited by M.-C. Bellissent-Funel and G.W. Neilson, NATO ASI Series. Series C: Mathematical and physical sciences, Vol.205, Dordrecht, Holland, D. Reidel, 1987, p.447-452, 12 refs.
DLC QD543.N38 1986
Ice crystal structure, Solutions, Ions, Ice nuclei.

42-2670
Regulations for operational ice service in the merchant fleet and the practical experience from the ice winter 1986/87. [Regelungen des betrieblichen Eisdienstes der Handelsflotte und die praktischen Erfahrungen aus dem Eiswinter 1986/87],
Molle, W., *Seewirtschaft*, Nov. 1987, 19(11), p.535-536, In German.
Ice navigation, Ice conditions, Weather forecasting.

42-2671
Natural convection solid/liquid phase change in porous media.
Beckermann, C., et al, *International journal of heat and mass transfer*, Jan. 1988, 31(1), p.35-46, With French, German and Russian summaries. 31 refs.
Viskanta, R.
Soil freezing, Heat transfer, Freeze thaw cycles, Phase transformations, Porous materials, Convection, Analysis (mathematics), Temperature effects.

42-2672
Blistering of built-up roof membranes: pressure measurements.
Korhonen, C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1986, SR 86-29, 22p., ADA-190 293, 13 refs.
Roofs, Surface temperature, Protective coatings, Maintenance, Pressure, Damage, Temperature measurement.
Several blisters in built-up roof membranes were instrumented with pressure and temperature sensors. Internal blister pressures varied from positive during the heat of the day to negative during the cool of the night; these pressure changes cause blisters to grow. Air is drawn into the blister at night. When exposed to sunshine, the air rapidly expands before it can escape. Water is not necessary to cause growth. Blisters grow best when the days are hot and the nights are cool. Pressures apparently do not occur within the insulated space of a roof to cause blisters. Reflective coatings may help to slow blister growth. Growth can be stopped by using a miniature pressure relief valve.

42-2673
Auger bit for frozen fine-grained soil.
Sellmann, P.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1986, SR 86-36, 13p., ADA-190 343, 5 refs.
Brockett, B.E.
Augers, Frozen ground strength, Drills, Military engineering, Penetration tests, Boreholes.
Auger bits 6.5 in. (165 mm) and 9.5 in. (241 mm) in diameter were modified to satisfy military and general engineering requirements for producing holes in frozen soil. A commercial bit was selected since it appeared to need only minor modification. Penetration tests were run in frozen fine-grained soils, one type containing some gravel. Modifications, which primarily involve changes in cutter relief angles, substantially improved performance. Penetration rates were as high as 5 ft/min (1.5 m/min), compared to 0-1.4 ft/min (0-0.4 m/min) for the unmodified bits.

42-2674
Fabrics in polar ice sheets: development and prediction.
Alley, R.B., *Science*, Apr. 22, 1988 240(4851), p.493-495, 31 refs.
Ice structure, Ice deformation, Viscosity, Stresses, Strains, Rheology, Antarctica—Byrd Station, Greenland.
Fabrics in polar ice sheets provide a record of deformational history and control the viscosity of ice during further deformation; they affect geophysical sensing of ice sheets and provide an accessible analogue to fabric development during deformation of other geological and engineering materials. A new synthesis of experimental and theoretical results shows that *c*-axis fabrics are quantitatively related to cumulative strain and stress state in ice sheets for the full range of likely flow patterns. Basal shear, divergent flow, and parallel flow cause *c* axes to rotate toward the vertical axis, whereas convergent flow causes *c* axes to rotate toward a vertical plane transverse to flow. (Auth.)

42-2675
Solute effects on ice recrystallization: an assessment technique.
Knight, C.A., et al, *Cryobiology*, Feb. 1988, 25(1), p.55-60, 10 refs.
Hallett, J., DeVries, A.L.
Recrystallization, Cryobiology, Antifreezes, Ice crystal growth.
Reliable assessment of the effect of a solute upon ice recrystallization is accomplished with "splat cooling," the impaction of a small solution droplet onto a very cold metal plate. The ice disc has extremely small crystals, and recrystallization can be followed without confusing effects caused by grain nucleation. This method confirms the exceptionally strong recrystallization inhibition effect of antifreeze protein from antarctic fish and shows that grain growth rate is a sensitive function of both grain size and solute concentration. (Auth.)

42-2676
Thermal ice pressure in cylindrical water tanks.
Kong, W.L., National Library of Canada. Canadian Theses Services. Microfiche No.0-315-32196-2, Kingston, Ontario, Queen's University, Aug. 1986, 212p., Ph.D. thesis. With French summary. 58 refs.
Ice pressure, Ice formation, Tanks (containers), Ice loads, Reinforced concretes, Cracks, Mathematical models, Ice creep, Flexural strength, Thermal regime.

42-2677
Evaluation of MPB ice thickness measurement sensor.
Rossiter, J.R., *Transport Canada. Report*, Sep. 1987, TP8810E, 19p. + appends., With French summary. 13 refs.
Ice cover thickness, Measuring instruments, Remote sensing, Sea ice, Spectra, Radar echoes, Tests.

42-2678
Surficial geologic map of the Anchorage B-7 NE quadrangle, Alaska.
Yehle, L.A., et al, *U.S. Geological Survey. Open-file report*, 1987, 87-416, 20p. + 2 maps, Refs. p.18-20.
Schmoll, H.R.
Glacial deposits, Geological maps, Moraines, Glacier surges, Climatic changes, Lacustrine deposits, Pleistocene, Geology, United States—Alaska—Anchorage.

42-2679
Snow crystals and their metamorphosis. [Les cristaux de neige et leurs métamorphoses],
Pahaut, E., *France. Météorologie nationale. Monographie*, June 1975, No.96, 58p. + slides, In French. 8 refs.
Snow crystal structure, Metamorphism (snow), Temperature effects, Meteorological factors, Photography, Snow accumulation, Snow cover distribution.

42-2680
Construction and operation of oil and gas wells in perennially frozen rocks. [Stroitel'stvo i ekspluatatiia skvazhin na neft' i gaz v vechnomerzlykh porodakh],
Medvedskiĭ, R.I., Moscow, Nedra, 1987, 230p., In Russian with abridged English table of contents enclosed. 39 refs.
Permafrost transformation, Permafrost physics, Permafrost thermal properties, Ground ice, Ice volume, Drilling fluids, Drills.

42-2681
Ice atlas 1985-1986: Monongahela River, Allegheny River, Ohio River, Illinois River, Kankakee River.
Gatto, L.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1987, SR 87-20, 367p. ADA-191 865.
Daly, S.F., Carey, K.L.
Ice conditions, River ice, Maps, Photointerpretation, Aerial surveys, Ice surveys, Ice reporting.
The ice maps in this atlas were prepared to document the 1985-86 ice conditions included in study areas for the River Ice Management (RIM) Program, namely river mile 0 to 12 on the Monongahela River, mile 0 to 17 on the Allegheny, mile 0 to 437 on the Ohio, mile 120 to 273 on the Illinois and mile 0 to 21 on the Kankakee. The maps were prepared from interpretation of vertical aerial video imagery taken from low flying aircraft. The interpreted ice conditions were classified into 5 units and transferred to base maps by reference to navigation charts and topographic maps. Ice floes or frazil slush and pans (IFPSP) was the most common ice unit on the lower Monongahela. Fragmented ice cover with open-water areas (FICOWA) was the most common ice unit in the lower Allegheny. Fragmented ice cover (FIC) and FICOWA were the most extensive ice units above Hannibal Dam on the Ohio; ICFSP were predominant below. Solid ice cover (SIC), FIC and FICOWA were the most extensive ice types on the lake-like areas of the Illinois River, while FICOWA and IFPSP predominated elsewhere on the Illinois. SIC and FIC were the most common ice units on the Kankakee River. There were frequent cancellations of flights of the Ohio, Allegheny and Monongahela during the 1985-86 winter because of low cloud ceilings. Various options are being explored to get more frequent coverage in the future.

42-2682
Design of earth dams. [Proektirovanie gruntovykh plotin],
Gol'din, A.L., et al, Moscow, Energoatomizdat, 1987, 304p. (Pertinent p.223-275), In Russian with abridged English table of contents enclosed. 189 refs.
Rasskazov, L.N.
Slope stability, Hydraulic structures, Dams, Earthquakes, Earth dams, Foundations, Permafrost beneath structures, Frost penetration, Blasting, Soil stabilization, Design.

42-2683
Imaging radar contributions to a major air-sea-ice interaction study in the Greenland Sea.
Shuchman, R.A., JPL the 2nd Spaceborne Imaging Radar Symposium. [Proceedings], Dec. 1, 1986, p.114-118. N87-17150.
Ice water interface, Ice air interface, Sea ice distribution, Remote sensing, Ice edge, Backscattering, Ice mechanics, Climatology, Greenland Sea.

42-2684
Primer of ice navigation. [Azbuka ledovogo plavaniia],
Arikainen, A.I., et al, Moscow, Transport, 1987, 224p., In Russian with abridged English table of contents enclosed. 33 refs.
Chubakov, K.N.
Ice navigation, Sea ice, Icebreakers, Ships, Sea ice distribution, Ice conditions, Drift, Ice breaking, Ice floes, Impact strength, Damage.

42-2685
Volatilization rates of organic contaminants from rivers.
Mackay, D., et al, *Water pollution research journal of Canada*, 1980, 15(1), p.83-98, 34 refs.
Yuen, T.K.
Water pollution, Ice cover effect.

42-2686
Velocity of linear crystallization of ice in macromolecular systems.
Blond, G., *Cryobiology*, Feb. 1988, 25(1), p.61-66, 11 refs.
Nucleation, Ice nuclei, Capillary ice, Ice crystals, Crystal growth, Cryobiology.

42-2687
Interaction of jet streak circulations during heavy snow events along the East Coast of the United States.
Uccellini, L.W., et al, *Weather and forecasting*, Dec. 1987, 2(4), p.289-308, 40 refs.
Kocin, P.J.
Snowstorms, Atmospheric disturbances, Synoptic meteorology.

42-2688
Operational forecasting of lake effect snowfall in western and central New York.
Niziol, T.A., *Weather and forecasting*, Dec. 1987, 2(4), p.310-321, 20 refs.
Weather forecasting, Lake effects, Snowfall.

42-2689
Shape and internal structure of Mimas.
Dermott, S.F., et al, *Icarus*, Jan. 1988, 73(1), p.25-65, 70 refs.
Thomas, P.C.
Extraterrestrial ice, Planetary environments.

42-2690
Gas-driven water volcanism and the resurfacing of Europa.
Crawford, G.D., et al, *Icarus*, Jan. 1988, 73(1), p.66-79, 33 refs.
Stevenson, D.J.
Extraterrestrial ice.

42-2691
Equation of state of ammonia-water liquid: derivation and planetological applications.
Croft, S.K., et al, *Icarus*, Feb. 1988, 73(2), p.279-293, 36 refs.
Lunine, J.I., Kargel, J.
Solutions, Extraterrestrial ice.

42-2692
Forest soils of the Lake Baykal basin. [Lesnye pochvy basseina ozera Baĭkal],
Krasnoshchekov, IU.N., et al, Novosibirsk, Nauka, 1987, 145p., In Russian with abridged English table of contents enclosed. Refs. p.136-144.
Gorbachev, V.N.
Lakes, Forest soils, Soil formation, Cryogenic soils, Taiga, Permafrost distribution, Mountains, Classifications, Permafrost depth, Active layer, Soil erosion, Forestry, Vegetation factors.

42-2693
Problems in economic development of floodplains of northern rivers. [Problemy osvoeniia poĭm severnykh rek],
Syroechkovskiĭ, E.E., ed, Moscow, Agropromizdat, 1987, 272p., In Russian. For selected papers see 42-2694 through 42-2698. Refs. passim.
Taiga, Active layer, Cryogenic soils, Permafrost depth, Rivers, Permafrost hydrology, Plant ecology, Plant physiology, Environmental protection, Permafrost distribution, Floodplains.

42-2694
Reclamation and economic development of floodplain lands in Siberia and the Far North. [Melioratsiia i osvoenie poĭmennykh zemel' Sibiri i Severa],
Demidov, N.P., Problemy osvoeniia poĭm severnykh rek (Problems in economic development of floodplains of northern rivers) edited by E.E. Syroechkovskiĭ, Moscow, Agropromizdat, 1987, p.16-22, In Russian.
Land reclamation, Hydraulic structures, Drainage, Permafrost beneath structures, Floodplains, USSR—Ob' River.

42-2695
Ecology and physiology of plant development on cold soils of the North. [Ekologo-fiziologicheskie osobennosti rosta i razvitiia rastenii na kholodnykh pochvakh Severa],
Korovin, A.I., Problemy osvoeniia poĭm severnykh rek (Problems in economic development of floodplains of northern rivers) edited by E.E. Syroechkovskiĭ, Moscow, Agropromizdat, 1987, p.77-84, In Russian.
Cryogenic soils, Soil temperature, Active layer, Permafrost depth, Permafrost hydrology, Plant ecology, Plant physiology.

42-2696
Problems of forestry in northern river valleys and ways of solving them. [Problemy vedeniia lesnogo khoziaĭstva v dolinakh rek Severa i puti ikh resheniia],
Rubtsov, M.V., Problemy osvoeniia poĭm severnykh rek (Problems in economic development of floodplains of northern rivers) edited by E.E. Syroechkovskiĭ, Moscow, Agropromizdat, 1987, p.171-180, In Russian.
Taiga, Forest soils, Tundra, Forest tundra, Microclimatology, Cryogenic soils, Protective vegetation, Human factors.

42-2697
Water preservation in the Lower Tunguska basin. [K okhrane vod basseina Nizhneĭ Tunguski],
Driukker, V.V., et al, Problemy osvoeniia poĭm severnykh rek (Problems in economic development of floodplains of northern rivers) edited by E.E. Syroechkovskiĭ, Moscow, Agropromizdat, 1987, p.218-225, In Russian. 15 refs.
Kuz'mina, A.E., Sorokovikova, L.M.
River basins, Soil microbiology, Hydrology, Permafrost beneath rivers, Environmental protection, Water chemistry, Soil composition, Human factors.

42-2698
Natural resources in river valleys of northern West Siberia and their rational utilization. [O prirodnykh resursakh dolin rek severa Zapadnoĭ Sibiri i ikh ratsional'nom ispol'zovanii],
Antonov-Druzhinin, V.P., Problemy osvoeniia poĭm severnykh rek (Problems in economic development of floodplains of northern rivers) edited by E.E. Syroechkovskiĭ, Moscow, Agropromizdat, 1987, p.242-247, In Russian. 3 refs.
River basins, Swamps, Soil composition, Cryogenic soils, Permafrost distribution, Frozen rock temperature, Alpine landscapes.

42-2699
Radar stations in geographic investigations. [Radiolokatsionnye stantsii v geograficheskikh issledovaniiakh],
Kotiukh, A.A., Leningrad, Universitet, 1987, 152p. (Pertinent p.90-148), In Russian with abridged English table of contents enclosed. 52 refs.
Radar, Icebergs, Sea ice distribution, Glacier ice, Ice cover thickness, Ocean waves, Meteorological factors.

42-2700
Formation of artificial hail nuclei in supercooled convective clouds. [Ob obrazovanii iskusstvennykh zarodysheĭ gradin v pereokhlazhdennom konvektivnom oblake],
Khorguani, V.G., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1987, Vol.67, p.23-29, In Russian. 4 refs.
Shoranov, R.A.
Artificial nucleation, Ice crystals, Ice crystal growth, Supercooled clouds, Artificial hailstones, Mathematical models.

42-2701
Isotope analysis as a method of studying the mechanism of origin and growth of hailstones (a review). [Izotopnyĭ analiz kak metod issledovaniia mekhanizma zarozhdeniia i rosta grada (obzor)],
Malkarov, A.S., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1987, Vol.67, p.30-47, In Russian. 44 refs.
Khorguani, V.G.
Supercooled clouds, Artificial nucleation, Ice crystal growth, Ice structure, Impurities, Isotope analysis.

42-2702
Contact electrification of crystallizing water drops. [Kontaktnaia elektrizatsiia kristallizuiushchikhsia kapel' vody],
Adzhiev, A.Kh., et al, *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy,* 1987, Vol.67, p.47-51, In Russian. 9 refs.
Kazankova, Z.P., Tamazov, S.T.
Drops (liquids), Ion density (concentration), Crystals, Cloud droplets, Freezing, Cloud electrification, Charge transfer, Water chemistry.

42-2703
Sediment transport characteristics of selected streams in the Susitna River basin, Alaska: data for water year 1985 and trends in bedload discharge, 1981-85.
Knott, J.M., et al, *U.S. Geological Survey. Open-file report,* 1987, 87-229, 51p. + charts, 18 refs.
Lipscomb, S.W., Lewis, T.W.
Sediment transport, River flow, Suspended sediments, Particle size distribution, Velocity, Bottom sediment, United States—Alaska—Susitna River.

42-2704
Drumlin Symposium; Proceedings.
Drumlin Symposium, Manchester, Sep. 16-18, 1985, Rotterdam, Netherlands, A.A. Balkema, 1987, 360p., Refs. passim.
Menzies, J., ed, Rose, J., ed.
Landforms, Glacial deposits, Geomorphology, Moraines, Glacier beds, Paleoclimatology, Meetings, Sediments.

42-2705
Bylot Island—Eastern Canadian Arctic.
Klassen, R.A., et al, International Union for Quaternary Research (INQUA) Congress, 12th, July 31-Aug. 9, 1987. 12th INQUA Congress Field Excursion A-1, Ottawa, Ontario, National Research Council of Canada, 1987, 54p., Refs. p.52-54.
Shilts, W.W.
Quaternary deposits, Ice sheets, Geomorphology, Marine deposits, Glaciation, Glacial deposits, Paleoclimatology, Stratigraphy, Sea level, Canada—Northwest Territories—Bylot Island.

42-2706
Research in Yukon.
Morison, S.R., et al, International Union for Quaternary Research (INQUA) Congress, 12th, July 31-Aug. 9, 1987. 12th INQUA Congress Field Excursion A20a and A20b, Ottawa, Ontario, National Research Council of Canada, July 1987, 110p., Refs. p.100-109.
Smith, C.A.S.
Quaternary deposits, Permafrost distribution, Permafrost thickness, Geomorphology, Ground ice, Thermokarst, Pleistocene, Ecosystems, Periglacial processes, Canada—Yukon Territory.

42-2707
Cumberland Sound and Frobisher Bay, southeastern Baffin Island, N.W.T.
Andrews, J.T., et al, International Union for Quaternary Research (INQUA) Congress, 12th, July 31-Aug. 9, 1987. 12th INQUA Congress Field Excursion C-2, Ottawa, Ontario, National Research Council of Canada, 1987, 91p., Refs. p.85-91.
Glacial deposits, Quaternary deposits, Glaciation, Moraines, Climatic factors, Sea ice distribution, Paleoclimatology, Vegetation, Sediments, Canada—Northwest Territories—Baffin Island.

42-2708
Drumlins and erosion marks in southern Ontario.
Shaw, J., et al, International Union for Quaternary Research (INQUA) Congress, 12th, July 31-Aug. 9, 1987. 12th INQUA Congress Field Excursion C-25, Ottawa, Ontario, National Research Council of Canada, July 1987, 17p., 37 refs.
Sharpe, D.
Landforms, Glacial deposits, Erosion, Subglacial drainage, Meltwater, Moraines, Paleoclimatology, Glacier beds.

42-2709
Glaciation of the Ross Sea and "facts" of S.M. Miagkov. [Oledenenie moria Rossa i "fakty" S.M. Miagkova],
Grosval'd, M.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia,* 1979, Vol.36, p.242-249, In Russian with English summary. 18 refs. A discussion of Miagkov's paper, 34-3147.
Glaciation, Glacier flow, Sea ice distribution, Sediments, Glacial geology, Moraines, Historical geology, Paleoclimatology, History, Antarctica—Ross Sea.
The present-day concept of the glacial history of Antarctica as developed by Mercer, Denton, Hughes, Thomas and others is well documented and receives increasingly ample support from new field data. Criticisms aimed at the concept by Miagkov are analyzed and shown to be based upon inaccurate interpretations. His conclusions are erroneous and should be disregarded. (Auth.)

42-2710
Data of glaciological studies: chronicle discussions.
Avsiuk, G.A., ed, New Delhi, Amerind Publishing Co., 1988, 486p., TT 81-52175, Translation of Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ. Khronika obsuzhdeniia, Vol.40, 1981. Refs. passim. For individual papers see 42-2711 through 42-2750.
Glaciology, Ice surveys, Snow surveys, Glaciers, Avalanches, Climatic changes, Classifications, Maps.

42-2711
Morphological-dynamic classification of ice sheets.
Grosval'd, M.G., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.61-72, TT 81-52175, 17 refs.
Mazo, V.L.
Ice mechanics, Ice structure, Ice sheets, Classifications, Dynamic properties.

42-2712
Numerical experiments on the hydrothermodynamics of the East Antarctic and Greenland ice sheets.
Verbitskiĭ, M.IA., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.73-86, TT 81-52175, 21 refs.
Ice sheets, Climatic changes, Ice mechanics, Heat transfer, Glacier flow, Mathematical models, Temperature effects, Hydrodynamics, Paleoclimatology, Greenland.
A three-dimensional thermodynamic model of a large stationary ice sheet is analyzed by the simultaneous solution of the heat-transfer and glacier dynamics equations. Atmospheric precipitation, surface temperature, and geothermal flux are preassigned in the computations. Surface topography of the ice sheets, their volume, temperature, and velocity distribution over a number of glaciers are calculated. The results of computations made for the present East Antarctic and Greenland ice sheets are in good agreement with the empirical data. Reported are the results of the computations of some parameters of the East Antarctic Ice Sheet during its maximum spreading at the end of the Miocene and for the last glacial maximum. Computations reveal that climatic warming, which may occur in future under the influence of human activity, will not bring about significant changes in the volume of the East Antarctic Ice Sheet, provided air temperatures increase by no more than 10-12 C. With less warming, its volume may even grow due to the increase of atmospheric precipitation. Under conditions of greater warming ice sheet disintegration may begin. The temperature increase crucial for Greenland is 7 C.

42-2713
Approximate theory of climate in the Late Pleistocene.
Kazanskiĭ, A.B., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.87-95, TT 81-52175, 13 refs.
Glaciation, Water balance, Paleoclimatology, Runoff, Evaporation, Water level, Oceanography, Analysis (mathematics).

42-2714
Simple model of the dynamics of snow-patch melting.
Mazo, V.L., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.96-102, TT 81-52175, 7 refs.
Snow melting, Glacier melting, Ice air interface, Snow air interface, Snow cover distribution, Snow mechanics, Analysis (mathematics).

42-2715
Calculation of the response of Central Asian glaciation to possible climatic changes.
Glazyrin, G.E., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.103-110, TT 81-52175, 10 refs.
Glaciation, Climatic changes, Mountain glaciers, Paleoclimatology, Analysis (mathematics).

42-2716
Reconstruction of mass balance, spatial position, and liquid discharge of Dzhankuat Glacier since the second half of the 19th century.
Diurgerov, M.B., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.111-126, TT 81-52175, 17 refs.
Popovnin, V.V.
Glacier mass balance, Glacier heat balance, Glacial hydrology, Runoff, Profiles, Paleoclimatology, USSR—Caucasus.

42-2717
Stratigraphy of the Vavilov Ice Dome in Severnaya Zemlya using isotopic geochemical methods.
Valkmiae, R.A., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.127-135, TT 81-52175, 15 refs.
Punning, IA.-M.K., Romanov, V.V., Barkov, N.I.
Ice structure, Isotope analysis, Glacier alimentation, Ice cores, Stratigraphy, Drill core analysis, USSR—Severnaya Zemlya.

42-2718
Local variability of summer meteorological conditions in the mountain-glacier basins of Upper Svanetiya.
Davidovich, N.V., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.136-148. TT 81-52175.
Glacial meteorology, Mountain glaciers, Glacier ablation, Seasonal variations, Wind factors, Temperature distribution, Diurnal variations, USSR—Verkhnaya Svanetiya.

42-2719
Some time-series properties of components of the external mass and energy exchange in a mountain-glacier basin.
Diurgerov, M.B., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.149-160, TT 81-52175, 5 refs.
Zhuk, V.A., Pylev, I.V.
Glacier mass balance, Mountain glaciers, Glacier heat balance, Runoff, Glacier melting, Air temperature, Time factor, Radiation balance, Analysis (mathematics), USSR—Caucasus.

42-2720
Change of river runoff with altitude on the Andes slopes in South America.
Karasik, G.IA., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.165-176, TT 81-52175, 9 refs.
River flow, Runoff, Snow melting, Glacier melting, Mountains, Watersheds, Altitude, Slope orientation, Air masses, Rain, Andes.

42-2721
Air temperature gradients in the high mountains of South America.
Kadomtseva, T.G., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.177-184, TT 81-52175, 8 refs.
Air temperature, Altitude, Mountains, Temperature gradients, Precipitation (meteorology).

42-2722
Hydrologic maps of the Great Caucasus for the World Atlas of Snow and Ice Resources.
Vladimirov, L.A., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.185-203, TT 81-52175, 12 refs.
Glacial hydrology, Runoff, River flow, Meltwater, Water reserves, Maps, Snow surveys, Ice surveys.

42-2723
Amount of solid precipitation on Caucasus glaciers.
Tareeva, A.M., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.204-212, TT 81-52175, 17 refs.
Glacier surfaces, Glacier alimentation, Glacier mass balance, Snow cover distribution, Firn, Glacier melting, Avalanches, Air temperature, Glacier ablation, USSR—Caucasus.

42-2724
Method of calculating maximum snow reserves in mountain glacier regions to compile maps for the World Atlas of Snow and Ice Resources.
Getker, M.I., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.213-228, TT 81-52175, 13 refs.
Snow accumulation, Mountain glaciers, Remote sensing, Snow surveys, Glacial meteorology, Maps, Firn, Analysis (mathematics).

42-2725
Problems of compiling special maps on different scales for the World Atlas of Snow and Ice Resources (illustrated by maps of the morphology and regime of Swiss Alps glaciers).
Timofeeva, N.A., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.229-236, TT 81-52175, 8 refs.
Maps, Mountain glaciers, Glacier mass balance, Glaciology, Switzerland—Alps.

42-2726
Program of comprehensive observations on sufels polygons.
Alekseev, V.R., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.241-247. TT 81-52175.
Sokolov, B.L.
Naleds, Permafrost, Geomorphology, Polygonal topography, Ice surveys, Snow surveys, Geochemistry, Geobotanical interpretation.

42-2727
Direct measurements of the position of the lower surface of the Ross Ice Shelf, Antarctica.
Zagorodnov, V.S., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.248-251, TT 81-52175, 1 ref
Ice temperature, Ice bottom surface, Ice shelves, Measuring instruments, Subglacial observations, Ultrasonic tests, Freezing, Antarctica—Ross Ice Shelf.
In Dec. 1978, glaciologists of the Institute of Geography, USSR Academy of Sciences working on the Ross Ice Shelf Project, installed ultrasonic sensors and quartz thermometers under the ice shelf in the J-9 camp. This equipment is intended to measure ice freezing and temperature at the lower surface of the ice shelf. Measurements repeated after 11 months showed that 60 mm of ice had frozen at the lower surface of the ice shelf, while the ice temperature 2 m from the lower surface was -2.26 C. Also presented are the scheme and description of the ultrasonic sensor installed in the borehole.

42-2728
Core drilling through Vavilov Glacier, Severnaya Zemlya.
Morev, V.A., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.252-256, TT 81-52175, 2 refs.
Pukhov, V.A., IAkovlev, V.M.
Ice drills, Thermal drills, Ice temperature, Boreholes, Antifreezes, Equipment, Glacier ice, USSR—Severnaya Zemlya.

42-2729
Core drilling at Spitsbergen.
Zagorodnov, V.S., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.257-266, TT 81-52175, 4 refs.
Zotikov, I.A.
Ice drills, Thermal drills, Boreholes, Glacier ice, Ice coring drills, Norway—Spitsbergen.

42-2730
Contents of large-scale composite avalanche maps.
Shcherbakov, M.P., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.267-273, TT 81-52175, 2 refs.
Avalanche deposits, Avalanche formation, Damage, Maps, Statistical analysis, USSR—Altai Mountains, USSR—Tien Shan, USSR—Pamir-Alai.

42-2731
Technique of mapping fissures and bandings on mountain glacier surfaces.
Nikulin, F.V., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.274-279, TT 81-52175, 3 refs.
Stulov, V.V., Tiulina, T.IU.
Mountain glaciers, Glacier surfaces, Ice structure, Mapping, Photographic techniques, Aerial surveys.

42-2732
Ice and meteorological observations on the ski route from Henrietta Island to the North Pole.
Khmelevskiĭ, IU.I., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.283-290, TT 81-52175, 2 refs.
Chizhov, O.P.
Ice conditions, Sea ice, Weather observations, Meteorological data, Air temperature, Hummocks, Cloud cover.

42-2733
Variations of some trace impurities in the atmospheric precipitation on Spitsbergen glaciers.
Punning, IA.-M.K., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.291-298, TT 81-52175, 11 refs.
Impurities, Glacier ice, Ice composition, Meteorological factors, Origin, Norway—Spitsbergen.

42-2734
Water and ice balances of Spitsbergen glaciers during 1977-78.
Gus'kov, A.S., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.299-304, TT 81-52175, 3 refs.
Glacial hydrology, Glacier mass balance, Water balance, Meteorological factors, Seasonal variations, Norway—Spitsbergen.

42-2735
Experimental investigations on diffusion in the snow cover of Yakutia.
Are, A.L., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.305-312, TT 81-52175, 15 refs.
Vapor diffusion, Snow surface, Depth hoar, Water vapor, Temperature effects, Snow density, Snow recrystallization, Meteorological factors, Soil water.

42-2736
Structural peculiarities of the snow and ice accumulations in the Snezhnaya Propast' in the western Caucasus.
Mavliudov, B.R., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.313-319, TT 81-52175, 8 refs.
Snow cover structure, Ice growth, Karst, Ice formation, Ice accretion, Firn, Temperature distribution, USSR—Caucasus.

42-2737
Problems of structural analysis in the study of sufels ice.
Golubev, V.N., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.320-325, TT 81-52175, 5 refs.
Koreĭsha, M.M., Solomatin, V.I.
Naleds, Ice structure, Freezing, Leakage, Water, Meteorological factors, Ice surface, Ice formation.

42-2738
Some processes on the Khadata sufels in the Polar Urals.
Il'ina, E.A., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.326-330, TT 81-52175, 8 refs.
Naleds, Ice strength, River flow, Floods, Subglacial observations.

42-2739
Artificial firn-ice dam.
Gokhman, V.V., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.331-335. TT 81-52175.
Il'ina, E.A.
Ice dams, Firn, Ice melting, Spray freezing, Floods, River crossings.

42-2740
Observations on the formation of water-snow flows in the Khibiny Mountains in 1979.
Freĭdlin, V.S., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.336-341, TT 81-52175, 4 refs.
Water flow, Snow mechanics, Snow melting, Meltwater, Snow accumulation, Meteorological factors, Snow hydrology, Snow depth.

42-2741
Correlation between the albedo of glacier surfaces and the optimal density of photographic images.
Grinberg, A.M., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.342-346, TT 81-52175, 1 ref.
Glacier surfaces, Albedo, Photographic reconnaissance, Surface roughness, Humidity, Ice optics, USSR—Caucasus.

42-2742
Current problems of engineering glaciology and the economic activity of people.
Kotliakov, V.M., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.353-372, TT 81-52175, 57 refs.
Ushakov, A.I., Khodakov, V.G.
Glaciology, Engineering, Ice surveys, Snow surveys, Glaciers, River ice, Lake ice, Sea ice.

42-2743
Collection of materials in England and Norway for the World Atlas of Snow and Ice Resources.
Dreĭer, N.N., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.373-374. TT 81-52175.
Kotliakov, V.M.
Snow accumulation, Ice volume, Glaciology, Climatology, Maps, Natural resources, Norway, United Kingdom.
The authors, one of whom is editor-in-chief of the forthcoming World Atlas of Snow and Ice Resources, visited several institutions in Norway and Britain. Their experiences, information received and documents acquired are described.

42-2744
Glaciological classifications and their interrelations with terminologies.
Smoliarova, N.A., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.377-391, TT 81-52175, 25 refs.
Glaciology, Terminology, Classifications, Climatic factors.

42-2745
Cryogenic processes, phenomena and formations.
Vtiurin, B.I., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.392-399, TT 81-52175, 19 refs.
Vtiurina, E.A.
Geocryology, Periglacial processes, Patterned ground, Terminology, Classifications.

42-2746
What is dead ice.
Vtiurin, B.I., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.400-403, TT 81-52175, 7 refs.
Ground ice, Glacier flow, Ice mechanics.

42-2747
Misconception about field methods of snow cover studies for forecasting avalanches.
Akkuratov, V.N., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.425-429, TT 81-52175, 7 refs.
Avalanche forecasting, Snow cover structure, Sublimation, Snow stratigraphy.

42-2748
Calculation of the total volume of ice in groups of mountain glaciers (in defense of our formulas).
Likhacheva, L.I., et al, Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.430-439, TT 81-52175, 6 refs.
Glazyrin, G.E., Shchetinnikov, A.S
Ice volume, Mountain glaciers, Mathematical models, Water reserves.

42-2749
Relation between glacier area and volume.
Zhuravlev, A.B., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.440-446, TT 81-52175, 8 refs.
Glacier ice, Ice cover thickness, Ice volume, Ice cover, Mountain glaciers.

42-2750
Discussion on the Ross Ice Cover in the Würm stage.
Miagkov, S.M., Data of glaciological studies: chronicle discussions. Edited by G.A. Avsiuk, New Delhi, Amerind Publishing Co., 1988, p.447-455, TT 81-52175, 19 refs. For original paper see 34-3147 or 11F-23276. For discussion by M.G. Grosval'd see 42-2709 or F-37269.
Glacial geology, Glacial deposits, Ice sheets, Moraines, Ground ice, Antarctica—Ross Ice Shelf.
Geophysical, geomorphological, geochemical and paleontological data contradicting the Ross Ice Sheet hypothesis are analyzed. It is believed that the extension of the West Antarctic Ice Sheet in Würm did not reach further than the middle of the present Ross Ice Shelf, and that north polar exploration standards should be applied to Antarctica with allowance for the peculiarities of antarctic climate.

42-2751
Snow crystal concentrations and size distributions measured at the ground: a comparison of an aspirated 2D-C with other techniques.
Deshler, T., et al, Conference on Weather Modification, 10th, Arlington, VA, May 27-30, 1986. Proceedings, Boston, American Meteorological Society, 1986, p.55-60, 7 refs.
Reynolds, D.W.
Snow crystals, Measuring instruments, Snowfall, Cloud seeding, Models, Particle size distribution.

42-2752
Processes and causes of lake acidification during spring snowmelt in the West-Central Adirondack Mountains, New York.
Galloway, J.N., et al, *Canadian journal of fisheries and aquatic sciences*, Sep. 1987, 44(9), p.1595-1602, With French summary. 38 refs.
Lake water, Water chemistry, Snowmelt, Ions.

42-2753
Comments on **"Hypersaline gradients in two Canadian High Arctic lakes" by K.M. Stewart and R.F. Platford.**
Ouellet, M., et al, *Canadian journal of fisheries and aquatic sciences*, Sep. 1987, 44(9), p.1676-1680, 17 refs. Comments on 41-1222. Includes reply by K.M. Stewart and R.F. Platford, p.1678-1680. 16 refs.
Pagé, P., Stewart, K.M., Platford, R.F.
Lake water, Permafrost, Water chemistry, Salinity, Temperature gradients, Lake ice, Canada—Northwest Territories—Garrow Lake.

42-2754
Pile load tests in saline permafrost at Clyde River, Northwest Territories.
Nixon, J.F., *Canadian geotechnical journal*, Feb. 1988, 25(1), p.24-32, With French summary. 14 refs.
Pile load tests, Permafrost, Saline soils, Soil creep, Bearing strength, Rheology.

42-2755
Numerical analysis of temperature field in a thawing embankment in permafrost.
Mu, S., *Canadian geotechnical journal*, Feb. 1988, 25(1), p.163-166, With French summary. 7 refs.
Permafrost, Ground thawing, Embankments, Heat transfer, Mathematical models, Phase transformations, Temperature distribution.

42-2756
Heat balance of the icy slope of Adelie Land, eastern Antarctica.
Wendler, G., et al, *Journal of applied meteorology*, Jan. 1988, 27(1), p.52-65, 30 refs.
Ishikawa, N., Kodama, Y.
Heat balance, Snow cover, Temperature variations, Wind (meteorology), Antarctica—Adélie Coast.
A complete heat budget investigation was carried out in summer at a site in Adelie Land, some 100 km from the edge of the antarctic ice sheet. For an average day, the all wave radiation budget, based on the fluxes toward the surface being positive, was positive for about 11 h, which is a short time considering that the sun was above the horizon between 22 and 24 h a day during the observational period. It is a result of the high albedo, which, on average, was about 83%. Furthermore, with increasing cloudiness, a more positive radiation budget was found, which is in contrast to most studies at lower latitudes. The heat flux in and out of the snow cover was small, and showed a typical sinusoidal diurnal variation. The mean daily values of snow heat flux were negative, as the snow cover was warmed during the observational period. The latent heat flux was negative on the average, as sublimation took place for most of the time. Deposition was observed only on a few nights. The sensible heat flux was negative around noon, but positive for most of the day, which means that the air above the surface was cooled, an inversion developed, and as the surface is inclined, gravitational flow (katabatic wind) started to occur. While the all-wave radiation balance had its minimum around midnight, the minimum temperature was observed some 3 h later, and the maximum wind speed occurred about 2 additional hours later. (Auth.)

42-2757
Model study of upper ocean-sea ice interactions.
Fichefet, T., et al, *Journal of physical oceanography*, Feb. 1988, 18(2), p.181-195, 56 refs.
Gaspar, P.
Sea ice, Ice water interface, Thermodynamics, Models, Heat flux.

42-2758
Testing a coupled ice-mixed-layer model under subarctic conditions.
Houssais, M.N., *Journal of physical oceanography*, Feb. 1988, 18(2), p.196-210, 36 refs.
Sea ice distribution, Sea water, Heat flux, Ice cover thickness, Models.

42-2759
Density functional theory of freezing for hexagonal symmetry: comparison with landau theory.
Laird, B.B., et al, *Journal of chemical physics*, Mar. 15, 1988, 88(6), p.3900-3909, 48 refs.
McCoy, J.D., Haymet, A.D.J.
Crystal growth, Freezing, Density (mass/volume), Phase transformations, Analysis (mathematics), Liquids.

42-2760
Effect of maximum density of water on freezing of a water-saturated horizontal porous layer.
Sugawara, M., et al, *Journal of heat transfer*, Feb. 1988, 110(1), p.155-159, 14 refs.
Inaba, H., Seki, N.
Freezing rate, Density (mass/volume), Water, Porous materials, Heat transfer, Convection, Analysis (mathematics).

42-2761
New structures and the technology of subgrade construction. [Novye konstruktsii i tekhnologiia sooruzheniia zemlianogo polotna]
Peshkov, P.G., ed, Moscow, Transport, 1987, 78p., In Russian. For selected papers see 42-2762 through 42-2766. Refs. passim.
Railroads, Construction materials, Embankments, Earth fills, Foundations, Permafrost beneath structures, Earth dams, Rock fills, Clays, Soil stabilization, Thixotropy, Fibers, Countermeasures.

42-2762
Prospects of using geotextiles in railroad construction. [Perspektivy primeneniia geotekstilia v zheleznodorozhnom stroitel'stve]
Zhorniak, S.G., et al, Novye konstruktsii i tekhnologiia sooruzheniia zemlianogo polotna (New structures and the technology of subgrade construction) edited by P.G. Peshkov, Moscow, Transport, 1987, p.3-11, In Russian.
Peshkov, P.G., IAkovleva, E.A.
Earth dams, Solifluction, Soil stabilization, Construction materials, Fibers, Railroads, Clay soils, Freeze thaw cycles, Embankments.

42-2763
Use of geotextiles for soil reinforcement on slopes. [Primenenie geotekstilia dlia armirovaniia otkosov]
Pesov, A.I., et al, Novye konstruktsii i tekhnologiia sooruzheniia zemlianogo polotna (New structures and the technology of subgrade construction) edited by P.G. Peshkov, Moscow, Transport, 1987, p.11-16, In Russian. 9 refs.
Tselikov, F.I., IAkovleva, E.A., Biriukova, L.M.
Roadbeds, Earth dams, Solifluction, Soil stabilization, Construction materials, Fibers, Embankments, Road construction.

42-2764
Experience in using geotextiles in roadbed construction. [Opyt sooruzheniia zemlianogo polotna s ispol'zovaniem geotekstilia]
Orlov, E.P., et al, Novye konstruktsii i tekhnologiia sooruzheniia zemlianogo polotna (New structures and the technology of subgrade construction) edited by P.G. Peshkov, Moscow, Transport, 1987, p.16-22, In Russian.
Tsernant, A.A.
Earth dams, Freeze thaw cycles, Construction materials, Thixotropy, Fibers, Sands, Countermeasures, Clays.

42-2765
Using nonwoven materials in preventing roadbed deformation. [Primenenie netkanykh materialov v protivodeformatsionnykh konstruktsiiakh zemlianogo polotna]
Dydyshko, P.I., Novye konstruktsii i tekhnologiia sooruzheniia zemlianogo polotna (New structures and the technology of subgrade construction) edited by P.G. Peshkov, Moscow, Transport, 1987, p.22-33, In Russian. 5 refs.
Embankments, Soil stabilization, Roadbeds, Freeze thaw cycles, Frost heave, Railroads, Deformation, Experimentation.

42-2766
Evaluating the measures and means designed to prevent deformation of earth dams built under complicated permafrost conditions in the BAM zone. [Otsenka raboty protivodeformatsionnykh meropriiatiĭ i ustroĭstv v nasypiakh vozvodimykh v slozhnykh merzlotno-gruntovykh usloviiakh trassy BAM]
Merenkov, N.D., et al, Novye konstruktsii i tekhnologiia sooruzheniia zemlianogo polotna (New structures and the technology of subgrade construction) edited by P.G. Peshkov, Moscow, Transport, 1987, p.51-58, In Russian. 4 refs.
Guletskiĭ, V.V., Minaĭlov, G.P.
Earth dams, Ground ice, Settlement (structural), Permafrost beneath structures, Baykal Amur railroad, Design, Embankments, Deformation, Ice melting, Countermeasures.

42-2767
Influence of size distribution of ice grains on thermal emission of snow cover. [Vliianie raspredeleniia ledinykh zeren po razmeram na teplovoe izluchenie snezhnogo pokrova]
Dmitriev, V.V., et al, *Akademiia nauk SSSR. Doklady*, 1987, 297(6), p.1363-1366, In Russian. 5 refs.
Kliorin, N.I., Mirovskiĭ, V.G., Etkin, V.S.
Snow cover structure, Snow physics, Thermal radiation, Snow crystals, Grain size.

42-2768
Complex radar investigation of fresh-water ice covers. [Kompleksnye radiolokatsionnye issledovaniia presnovodnykh ledianykh pokrovov]
Kondrat'ev, K.IA., et al, *Akademiia nauk SSSR. Doklady*, 1988, 298(2), p.317-320, In Russian. 7 refs.
River ice, Lake ice, Aerial surveys, Spaceborne photography, Side looking radar, Mapping, Ice surveys, Ice reporting.

42-2769
Mathematical modeling of heat and mass transfer processes in geocryological forecasts.
Permiakov, P.P., *Journal of engineering physics*, July 1987 (Pub. Jan. 88), 53(1), p.840-844, Translated from Inzhenerno-fizicheskiĭ zhurnal, 53(1):124-129. 17 refs.
Mathematical models, Fines, Freeze thaw cycles, Heat transfer, Mass transfer.

42-2770
Thermal resistance of frost on a finned air cooler.
Chepurnoĭ, M.N., et al, *Journal of engineering physics*, Mar. 1987 (Pub. Sep. 87), 52(3), p.307-309, Translated from Inzhenerno-fizicheskiĭ zhurnal, 52(3):421-425. 9 refs.
Shnaĭder, V.E., Lomakin, V.N., Siniuk, N.I.
Cooling systems, Hoarfrost, Ice accretion, Heat transfer, Mass transfer, Measuring instruments.

42-2771
Freezing of water in vertical channels formed in a frozen soil layer.
Medvedskiĭ, R.I., *Journal of engineering physics*, Aug. 1987 (Pub. Feb. 88), 53(2), p.954-959, Translated from Inzhenerno-fizicheskiĭ zhurnal, Vol.53(2):290-296. 6 refs.
Soil freezing, Frozen ground, Ground thawing, Well casings, Mathematical models.

42-2772
Necessary condition for heterogeneous nucleation of ice from vapor.
Kim, N.S., et al, *Colloid journal of the USSR*, Mar.-Apr. 1987, 49(2), p.219-223, For Russian original see 42-1945. 23 refs.
Shkodkin, A.V.
Aerosols, Dispersions, Ice formation, Ice nuclei, Heterogeneous nucleation.

42-2773
Petrography of frozen rocks. [Petrografiia merzlykh porod]
Ershov, E.D., et al, Moscow, Universitet, 1987, 311p., In Russian with abridged English table of contents enclosed. 58 refs.
Danilov, I.D., Cheverev, V.G.
Frozen rocks, Permafrost structure, Permafrost thermal properties, Ground ice, Frozen rock strength, Ice physics, Lithology, Cryogenic textures, Cryogenic structures, Geocryology, Permafrost physics, Composition, Chemical properties.

42-2774
Snow loads on sloped roofs.
Sack, R.L., *Journal of structural engineering*, Mar. 1988, 114(3), p.501-517, 18 refs.
Snow loads, Roofs, Snow slides, Snow accumulation, Design, Thermal effects, Heat flux.

42-2775
Effect of freezing cycles on bond strength of concrete.
Shih, T.S., et al, *Journal of structural engineering,* Mar. 1988, 114(3), p.717-726, 4 refs.
Lee, G.C., Chang, K.C.
Concrete strength, Freeze thaw cycles, Concrete freezing, Adhesion, Reinforced concretes, Compressive properties, Temperature effects.

42-2776
Chemistry of deicing roads: penetrating ice.
Trost, S.E., et al, *Journal of transportation engineering,* Mar. 1988, 114(2), p.221-231, 15 refs.
Heng, F.J., Cussler, E.L.
Chemical ice prevention, Ice removal, Road icing, Chemical analysis, Penetration, Experimentation, Mass transfer, Analysis (mathematics).

42-2777
Winter maintenance in Europe. [La viabilità invernale in Europa], *Neve international,* 1988, No.1, p.18-22, In Italian with French, German and English summaries.
Road maintenance, Winter maintenance, Snow removal, Cost analysis.

42-2778
Rescue comes from the air. [La salvezza viene dall'aria],
Jacobs, I., *Neve international,* 1988, No.1, p.41-42, In Italian with French, German and English summaries.
Rescue operations, Avalanche formation, Helicopters, Rescue equipment.

42-2779
Legal aspects of the use of avalanche maps. [Aspetti giuridici dell'utilizzazione della cartografia delle valanghe],
Del Zotto, G., *Neve international,* 1988, No.1, p.43-46, In Italian with French, German and English summaries.
Avalanches, Maps, Distribution.

42-2780
Thermal expansion and piezoelectric response of PZT channel 5800 for use in low-temperature scanning tunneling microscope designs.
Simpson, A.M., et al, *Review of scientific instruments,* Nov. 1987, 58(11), p.2193-2195, 7 refs.
Wolfs, W.
Low temperature tests, Instruments, Thermal expansion, Temperature effects.

42-2781
Characterization of Canadian fly ashes and their relative performance in concrete.
Carette, G.G., et al, *Canadian journal of civil engineering,* Oct. 1987, 14(5), p.667-682, With French summary. 5 refs.
Malhotra, V.M.
Concrete strength, Freeze thaw cycles, Rheology, Concrete admixtures, Concrete hardening, Chemical composition.

42-2782
Anchoring by injection of Portland cement in the Arctic. [Injection d'ancrages a base de ciment Portland dans l'arctique],
Benmokrane, B., et al, *Canadian journal of civil engineering,* Oct. 1987, 14(5), p.690-693, In French with English summary. 3 refs.
Aitcin, P.-C., Ballivy, G.
Cold weather construction, Cements, Anchors, Active layer, Shear strength.

42-2783
International Aircraft Icing Technology Work Shop. International Aircraft Icing Technology Work Shop, Cleveland, OH, Nov. 4-6, 1987, U.S. National Aeronautic and Space Administration—FAA-AIAA—SAE, [1987], n.p., Unpublished manuscript.
Aircraft icing, Ice removal, Ice control, Unfrozen water content, Protection, Meetings, Tests, Measuring instruments.

42-2784
Frost protection of road pavements with insulating boards. Norwegian practice and experience.
Refsdal, G., *Frost i jord,* Dec. 1987, No.26, p.3-10, 7 refs.
Frost protection, Pavements, Road icing, Thermal insulation, Design, Experimentation, Norway.

42-2785
Permafrost in the Northern Hemisphere.
Flaate, K., *Frost i jord,* Dec. 1987, No.26, p.11-13.
Permafrost thickness, Permafrost distribution, Permafrost preservation, Natural resources, Air temperature, Precipitation (meteorology).

42-2786
Permafrost and hydropower development in Greenland.
Langager, H.C., *Frost i jord,* Dec. 1987, No.26, p.15-21.
Permafrost, Electric power, Glacier melting, Precipitation (meteorology), Design, Meltwater, Climatic factors, Greenland.

42-2787
Dam Rieppejavri, Troms—dam foundation with permafrost.
Torblaa, I., *Frost i jord,* Dec. 1987, No.26, p.23-26.
Earth dams, Foundations, Artificial thawing, Cold weather construction, Permafrost bases, Drilling, Frozen rocks, Ground thawing.

42-2788
Preliminary analysis of climatic data from the permafrost station at Svea, Spitsbergen.
Bakkehöi, S., et al, *Frost i jord,* Dec. 1987, No.26, p.27-32, 5 refs.
Bandis, C.
Permafrost thermal properties, Soil temperature, Ground thawing, Solar radiation, Air temperature, Forecasting, Meteorological data, Heat flux, Norway — Spitsbergen.

42-2789
Foundation design on permafrost.
Gregersen, O., *Frost i jord,* Dec. 1987, No.26, p.33-42, 7 refs.
Permafrost beneath structures, Foundations, Cold weather construction, Climatic factors, Design, Tests, Thermal insulation.

42-2790
Experiences from tunneling in Svalbard.
Sondbö, L., et al, *Frost i jord,* Dec. 1987, No.26, p.43-49.
Orheim, A.
Tunneling (excavation), Permafrost, Mining, Ground water, Seepage, Climatic factors, Coal, Norway—Svalbard.

42-2791
Resistance of high-strength concrete to freezing and thawing. *Concrete construction,* Mar. 1988, 33(3), p.344-347.
Concrete strength, Freeze thaw cycles, Concrete freezing, Air entrainment, Water cement ratio, Concrete admixtures.

42-2792
Unsteady flow simulation for an ice-covered river. Discussion.
Balloffet, A., *Journal of hydraulic engineering,* Mar. 1988, 114(3), p.355-358, Discussion of a paper by Yapa and Shen, see 41-1086. Closure by P.D. Yapa and H.T. Shen. 4 refs.
Yapa, P.D., Shen, H.T.
River flow, River ice, Ice cover effect, Ice conditions, Ice water interface, Flow rate.

42-2793
Summary of proceedings: Northern and Offshore Information Resources Seminar Series, May 1985, Oct. 1985, Jan. 1986, Apr. 1986, Nov. 1986 and Apr. 1987.
Clarke, E., ed, Calgary, Arctic Institute of North America, Jan. 1988, 14p.
Goodwin, R., ed.
Organizations, Research projects, Data processing, Polar regions, Ocean environments, Meetings.

42-2794
Measurements of the atmospheric radiation distribution during snowfalls at 2.2 and 3.3 mm wavelengths.
Kuznetsov, I.V., *Telecommunications and radio engineering,* Dec. 1986, No.12, p.125-127, Translated from Radiotekhnika, 1986, No.9, p.79-81. 6 refs.
Atmospheric physics, Radiation absorption, Snowfall, Radiometry, Snowflakes, Scattering, Measuring instruments, Snow cover.

42-2795
Some characteristics of benthic algae from the Franz Josef Archipelago. [Nekotorye osobennosti flory bentosnykh vodoroslei arkhipelaga Zemlia Frantsa-Iosifa],
Vinogradova, K.L., *Botanicheskii zhurnal,* 1987, 72(9), p.1203-1206, In Russian. 5 refs.
Algae, Ocean environments, Plant ecology, Ecosystems, Distribution, Arctic Ocean.

42-2796
Structure and dynamics of light forests growing beneath bald peaks and in sub-Alpine areas of the western Sayan Mountains. [Struktura i dinamika podgol'tsovykh i subal'piiskikh redkolesii Zapadnogo Saiana],
Vlasenko, V.I., *Botanicheskii zhurnal,* 1987, 72(9), p.1236-1245, In Russian. 34 refs.
Alpine tundra, Alpine landscapes, Cryogenic soils, Vegetation patterns, Plant ecology, Snow cover effect.

42-2797
Role of historical factor in plant adaptation to extreme climatic conditions of the Arctic tundra subzone (the case of Wrangel' Island). [Rol' istoricheskogo faktora v osvoenii rasteniiami ekstremal'nykh uslovii podzony arkticheskikh tundr (na primere ostrova Vrangelia)],
IUrtsev, B.A., *Botanicheskii zhurnal,* 1987, 72(11), p.1436-1447, In Russian with English summary. Refs. p.1446-1447.
Arctic landscapes, Vegetation patterns, Alpine tundra, Plant ecology, Ecosystems, Mosses.

42-2798
Observation of the "anomalous" spectra of Raman scattering of light during the water-ice phase transition.
Glushkov, S.M., et al, *Soviet physics. Doklady,* Dec. 1986, 31(12), p.982-984, 7 refs. For Russian original see 41-3686.
Panchishin, I.M., Fadeev, V.V.
Phase transformations, Water, Supercooling, Ice formation, Light scattering, Spectra, Measuring instruments.

42-2799
Stabilizing frost heave deformations of trestle-bridge piles. [Stabilizatsiia deformatsii moroznogo vypuchivaniia opor svaĭno-estakadnykh mostov],
Puskov, V.I., et al, *Transportnoe stroitel'stvo,* Mar. 1988, No.3, p.13-14, In Russian. 4 refs.
Poliankin, G.N., Ivashkin, S.V., Kritskiĭ, M.IA.
Bridges, Foundations, Piles, Permafrost beneath structures, Frost heave.

42-2800
Spherically symmetrical acoustic propagation across a fluid/fluid boundary.
Buckingham, M.J., *IEEE transactions on geoscience and remote sensing,* Feb. 1988, 83(2), p.566-570. 8 refs.
Underwater acoustics, Ice edge, Noise (sound), Ice acoustics, Ice floes.

42-2801
Mössbauer spectroscopic study of the iron mineralogy of post-glacial marine clays.
Torrance, J.K., et al, *Clays and clay minerals,* 1986, 34(3), p.314-322, 32 refs.
Hedges, S.W., Bowen, L.H.
Clays, Clay soils.

42-2802
Frost testing by uni-directional freezing.
Van der Klugt, L.J.A.R., *British Ceramic. Transactions and journal,* Jan.-Feb. 1988, 87(1), p.8-12.
Freeze thaw tests, Clays, Frost resistance.

42-2803
Single-horn reflectometry for *in situ* dielectric measurements at microwave frequencies.
Arcone, S.A., et al, *IEEE transactions on geoscience and remote sensing,* Jan. 1988, 26(1), MP 2333, p.89-92, 10 refs.
Larson, R.W.
Dielectric properties, Reflectivity, Remote sensing, Ice physics.

42-2804
Plastic analysis of ice contact problems.
Nordgren, R.P., *Journal of applied mechanics,* Mar. 1988, 55(1), p.73-80, 20 refs.
Offshore structures, Floating ice, Ice pressure, Impact strength, Pressure ridges.

42-2805
Delta built by ice rafting in outflow from a glacial lake.
Gilbert, R., et al, *Geografiska annaler. Series A: Physical geography,* 1987, 69 A(3-4), p.375-378, 8 refs.
Desloges, J.R.
Ice rafting, Glacier melting, Glacial lakes, Deltas, Sediment transport, Subglacial drainage, Ice dams, Icebergs, Calving.

42-2806
Wind erosion and sand dune formation on high Lake Superior bluffs.
Marsh, W.M., et al, *Geografiska annaler. Series A: Physical geography,* 1987, 69 A(3-4), p.379-391, 24 refs.
Marsh, B.D.
Wind erosion, Frost penetration, Sands, Glacial deposits, Ice sublimation, Heat transfer, Water erosion, Lake water, Thermodynamics.

42-2807
Study of snow and ice temperatures on Vestfonna, Svalbard, 1956, 1957 and 1958.
Palosuo, E., *Geografiska annaler. Series A: Physical geography,* 1987, 69 A(3-4), p.431-437, 17 refs.
Snow temperature, Ice temperature, Snow melting, Glacier ablation, Heat balance, Norway—Svalbard.

42-2808
Mass balance of Storglaciären during the 20th century.
Holmlund, P., *Geografiska annaler. Series A: Physical geography,* 1987, 69 A(3-4), p.439-447, 17 refs.
Glacier mass balance, Ice volume, Glacier surveys, Glacier melting, Maps, Climatic factors, Sweden—Storglaciären.

42-2809
Preliminary development of a fiber optic sensor for TNT.
Zhang, Y., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1988, SR 88-04, 16p., ADA-191 865, 6 refs.
Seitz, W.R., Sundberg, D.C., Grant, C.L.
Soil pollution, Detection, Ground water, Optical properties, Military research, Water pollution.
Research aimed at the development of a fiber-optic based sensor is described for *in-situ* detection of TNT in groundwater. Three approaches were evaluated in depth. All three involved use of a material to concentrate TNT in the field of view of an optical fiber. The materials tested were 1) a concentrated dextran solution isolated by a semi-permeable membrane; 2) a preswollen cross-linked polyvinyl alcohol polymer; and 3) an amine-loaded PVC membrane. Another approach based on the formation of a colored TNT anion at high pH was also considered. The amine-loaded PVC membrane appears to have the most promise. Clear membranes were prepared which reacted with TNT to form a colored product. Measurement is made at 520 nm which is very convenient for fiber optic-based sensing. Various primary amines were assessed.

42-2810
Sea ice deformation in the Bothnian Bay off Hailuoto, Finland, in March 1986.
Alestalo, J., et al, *Bothnian Bay reports,* 1986, No.4, p.51-63, 7 refs.
Heikkinen, O., Tabuchi, H.
Ice deformation, Sea ice, Ice rafting, Pressure ridges, Ice growth, Pack ice, Fast ice, Ice edge, Ice conditions, Bothnia, Bay.

42-2811
Water structure in crystalline solids: ices to proteins.
Savage, H., *Water science reviews,* 1986, Vol.2, p.67-148, 143 refs.
Ice crystal structure, High pressure ice, Hydrogen bonds, Molecular structure, Phase transformations, X ray diffraction, Cubic ice, Water structure.

42-2812
Airphoto interpretation of changes to the position of tidewater glaciers and deltas along the NE Baffin coast.
Syvitski, J.P.M., *Canadian data report of hydrography and ocean sciences,* July 1987, No.54, Sedimentology of Arctic fjords experiment: data report, Vol.3. Compiled by J.P.M. Syvitski and D.B. Praeg, p.(14)1-(14)-11, 2 refs.
Glacier flow, Deltas, Photointerpretation, Ice conditions, Aerial surveys, Glacier surveys, Flow rate, Tides, Canada—Northwest Territories—Baffin Island.

42-2813
Systematic design of marinas for ice conditions.
Wortley, C.A., Conference on Innovations in Port Engineering and Development in the 1990's, Oakland, CA, May 19-21, 1986. Proceedings. Edited by P.H. Sorensen. Ports 86, New York, American Society of Civil Engineers, 1986, p.453-465, 7 refs.
Ports, Ice loads, Ice conditions, Design criteria, Ice control, Soil strength, Piles, Piers, Docks.

42-2814
Bacterial ice nucleation: molecular biology and applications.
Warren, G.J., Biotechnology and genetic engineering reviews, Vol.5. Edited by G.E. Russell, Wimborne, Dorset, Intercept Ltd., 1987, p.107-135, Refs. p.132-135.
Ice nuclei, Organic nuclei, Bacteria, Ice formation, Molecular structure, Vegetation, Frost protection, Temperature effects.

42-2815
Water and frost—stability risks for embankments of fine-grained soils.
Ekström, A., et al, Symposium on Failures in Earthworks, London, Mar. 6-7, 1985. Proceedings. Failures in earthworks, London, Thomas Telford, 1985, p.155-166.
Olofsson, T.
Embankments, Frost action, Stability, Soil creep, Ground water, Sliding, Drainage, Ground thawing, Water erosion, Cold weather construction, Sweden.

42-2816
Diesel-electric ship *Vitus Bering.* [Dizel'-elektrokhod "Vitus Bering"],
Semenov, S., *Morskoi flot,* 1988, No.2, p.41-45, In Russian.
Ice navigation, Icebreakers, Ships, Marine transportation, Design.

42-2817
Mathematical models of a three-stage orographic cloud system and its modifications by aerosol generators.
Khvorost'ianov, V.I., et al, *Soviet meteorology and hydrology,* 1988, No.1, p.22-31, Translated from Meteorologiia i gidrologiia. 20 refs.
Toroian, G.R.
Ice crystals, Cloud seeding, Smoke generators, Ice formation, Mathematical models, Weather modification.

42-2818
Practical use of formulas for calculating thickness of sea ice.
Kuznetsov, I.M., et al, *Soviet meteorology and hydrology,* 1987, No.11, p.73-78, Translated from Meteorologiia i gidrologiia. 20 refs.
Garmanov, A.L.
Drift stations, Ice surveys, Ice cover thickness, Arctic Ocean.

42-2819
Glacial disch· e model in the Swiss Alps.
Kang, E., et a. ournal of glaciology and geocryology, 1987, 9(1), p.1-14, 5 refs., In Chinese with English summary.
Jensen, H.
Glacial hydrology, Glacier ablation, Drainage, Glacier melting, Snowmelt, Switzerland—Alps.

42-2820
Runoff variations in Heihe River and their forecast.
Lai, Z., *Journal of glaciology and geocryology,* 1987, 9(1), p.15-22, 3 refs., In Chinese with English summary.
Runoff forecasting, River flow, Precipitation (meteorology), Mountains, Climatic factors, Seasonal variations, Hydrology.

42-2821
Characteristics of debris flow caused by outburst of glacial lakes on the Boqu River in Xizang, China.
Xu, D., *Journal of glaciology and geocryology,* 1987, 9(1), p.23-34, 8 refs., In Chinese with English summary.
Glacial deposits, Glacial lakes, Moraines, Channels (waterways), River flow, Floods, Sediment transport, Grain size, Erosion, China—Xizang.

42-2822
Numerical simulation analysis of heat and mass transfer under a channel in freezing.
An, W., et al, *Journal of glaciology and geocryology,* 1987, 9(1), p.35-46, 6 refs., In Chinese with English summary.
Chen, X., Wu, Z.
Frozen ground, Soil water, Heat transfer, Moisture transfer, Mass transfer, Soil freezing, Mathematical models.

42-2823
Attempt to map of the glaciers on Gongga Mountain using a combination of terrestrial and aerial photogrammetry.
Chen, J., et al, *Journal of glaciology and geocryology,* 1987, 9(1), p.47-53, 8 refs., In Chinese with English summary.
Yang, C.
Glacier surveys, Photogrammetry, Remote sensing, Mountain glaciers, Microwaves, Mapping, China—Gongga Mountain.

42-2824
Preliminary study of the rock glaciers in the Gongga Mt. area.
Li, S., et al, *Journal of glaciology and geocryology,* 1987, 9(1), p.54-60, 4 refs., In Chinese with English summary.
Yao, H.
Rock glaciers, Glacier surveys, Avalanches, Snow line, Permafrost distribution, Geomorphology, Ground ice, Rheology, China—Gongga Mountain.

42-2825
Grain-size characteristics of glacial debris, and explanation of the processes of glacial transports and sediments at the Gongba Glaciers in Mt. Gongga.
Kang, J., *Journal of glaciology and geocryology,* 1987, 9(1), p.61-68, 11 refs., In Chinese with English summary.
Glacial deposits, Sediment transport, Glacier flow, Glacier melting, Grain size, Abrasion, China—Gongga Mountain.

42-2826
Preliminary research on temperature regime in seasonal snow cover and its relation to frost penetration depth in Gongnaisi Valley, Tianshan Mountains.
Zhang, Z., *Journal of glaciology and geocryology,* 1987, 9(1), p.69-79, 3 refs., In Chinese with English summary.
Snow temperature, Frost penetration, Soil temperature, Thermal regime, Freezing indexes, Seasonal variations, Temperature distribution, Heat transfer, Mountains, China—Tian Shan.

42-2827
Some fossil periglacial phenomena in the Shennongjia Mountains.
Zhou, Z., *Journal of glaciology and geocryology,* 1987, 9(1), p.81-86, 2 refs., In Chinese with English summary.
Periglacial processes, Fossils, Geomorphology, Mountains, Climatic changes, Glaciation, Loess, Paleoclimatology, China—Shennongjia Mountains.

42-2828
Analysis of the harm and genesis of glacial debris flows along the China-Pakistan highway from Kashi to Tashikuergan.
Wang, J., *Journal of glaciology and geocryology,* 1987, 9(1), p.87-94, 2 refs., In Chinese with English summary.
Glacial deposits, Sediment transport, Meltwater, Roads, Gullies, Damage.

42-2829
Information on U.S. Army Cold Regions Research and Engineering Laboratory.
Zhu, Y., *Journal of glaciology and geocryology,* 1987, 9(1), p.95-96, In Chinese.
Organizations, Research projects, Bibliographies, U.S. Army CRREL.

42-2830
General characteristics of the Yinsugaiti Glacier.
Yang, H., *Journal of glaciology and geocryology,* 1987, 9(1), p.97-98, 3 refs., In Chinese.
Glacier surveys, Mountain glaciers, Statistical analysis, China—Yinsugaiti Glacier.

42-2831
Winter road sense.
Perry, A., et al, *Geographical magazine,* Dec. 1986, 58(12), p.628-631.
Symons, L., Symons, A.C.
Winter maintenance, Road maintenance, Weather forecasting.

42-2832
Fluid dynamics kill Wyoming icicle.
Grace, R.D., *World oil,* Apr. 1987, 204(4), p.45-53, 1 ref.
Wells, Ice loads, Drills, Icing, Countermeasures.

42-2833
Size of bacterial ice-nucleation sites measured *in situ* by radiation inactivation analysis.
Govindarajan, A.G., et al, *National Academy of Sciences. Proceedings,* Mar. 1988, 85(5), p.1334-1338, 42 refs.
Lindow, S.E.
Organic nuclei, Bacteria, Ice formation, Solutions, Molecular structure.

42-2834
Glacial resources and their distributive characteristics in the Tianshan Mountains of China.
Liu, C., et al, *Journal of glaciology and geocryology,* 1987, 9(2), p.99-107, 2 refs., In Chinese with English summary.
Ding, L.
Glacier surveys, Ice volume, Mountain glaciers, Distribution, China—Tian Shan.

42-2835
Direct observation of basal sliding and deformation of basal drift at subfreezing temperatures.
Echelmeyer, K., et al, *Journal of glaciology and geocryology,* 1987, 9(2), p.109-122, 28 refs., In Chinese with English summary.
Wang, Z.
Glacier flow, Basal sliding, Subglacial caves, Ice tunnels, Temperature effects, Glacier thickness, Surface roughness, Viscosity.

42-2836
Effect of melt-water percolation on the temperature of a glacier.
Cai, B., et al, *Journal of glaciology and geocryology,* 1987, 9(2), p.123-130, 9 refs., In Chinese with English summary (p.108).
Xie, Z., Huang, M.
Glacier ice, Ice temperature, Seepage, Mass transfer, Heat transfer, Mathematical models, Temperature variations.

42-2837
Calculation of glacial longitudinal sections under stable conditions—Glacier No.1 at the headwater of the Urumqi River, Tianshan Mt, as an example.
Cao, M., et al, *Journal of glaciology and geocryology,* 1987, 9(2), p.131-138, 8 refs., In Chinese with English summary.
Meier, M.F.
Glacier flow, Glacier surfaces, Glacier mass balance, Glacier thickness, Glacial hydrology, Slope orientation, Velocity, Ice volume, China—Tian Shan.

42-2838
Numerical analysis of creep deformation and stress of the artificial freezing shaft wall.
Shen, M., *Journal of glaciology and geocryology,* 1987, 9(2), p.139-148, 1 ref., In Chinese with English summary.
Shafts (excavations), Walls, Artificial freezing, Rheology, Deformation, Soil creep, Analysis (mathematics), Models, Stresses, Soil freezing.

42-2839
Relationship between plateau plants and melting soil-layer in the frozen season in Tumen, Prefecture Xizang.
Qin, Z., et al, *Journal of glaciology and geocryology,* 1987, 9(2), p.149-156, 5 refs., In Chinese with English summary.
Xie, W., Tong, B., Xie, Y.
Active layer, Vegetation, Ground thawing, Thaw depth, Soil temperature, Temperature effects, Climatic factors, Seasonal variations.

42-2840
Sporo-pollen analysis of the Quaternary in the Northwest of the Chaidam Basin.
Wu, G., et al, *Journal of glaciology and geocryology,* 1987, 9(2), p.157-164, 6 refs., In Chinese with English summary.
Wang, K.
Quaternary deposits, Pollen, Geology, Palynology, Fossils, Paleoclimatology, Glaciology.

42-2841
Preliminary research on the genesis and environment of the sediments in the Lushan Mountain from some of their microtextures and microstructures.
Tang, Y., *Journal of glaciology and geocryology,* 1987, 9(2), p.165-170, In Chinese with English summary.
Quaternary deposits, Sediments, Microstructure, Soil texture, Origin, Mountains, Rock mechanics, Sliding, China—Lushan Mountain.

42-2842
Analysis of the frost damage to the testing subgrade on permafrost in the Fenghushan region on the Qinghai-Xizang Plateau.
Ye, B., *Journal of glaciology and geocryology,* 1987, 9(2), p.171-178, 2 refs., In Chinese with English summary.
Permafrost, Frost action, Subgrades, Frost heave, Ground water, Damage, Engineering, Slope stability.

42-2843
Preliminary research on the artificial permafrost table of retaining dams.
Shang, J., *Journal of glaciology and geocryology,* 1987, 9(2), p.179-182, In Chinese with English summary.
Permafrost depth, Artificial freezing, Earth dams, Engineering.

42-2844
Primary investigation of the Juneau Icefield, USA.
Yao, T., *Journal of glaciology and geocryology,* 1987, 9(2), p.183-186, In Chinese with English summary.
Glacier surveys, Distribution, Snow line, Mountains, United States—Alaska—Juneau.

42-2845
Numerical study of the response of the southern ocean and its sea ice to a CO2-induced atmospheric warming.
Van Ypersele, J.P., *National Center for Atmospheric Research. Cooperative thesis,* 1986, NCAR/CT-99, 135p., PB87-163218, Refs. p.110-135.
Mathematical models, Sea ice distribution, Heat flux, Climatic changes, Carbon dioxide, Antarctica—Weddell Sea, Drake Passage.
A comprehensive coupled model of ocean circulation and sea ice has been developed to study a selected area of the southern ocean that includes the Weddell Sea and the Drake Passage. An existing general circulation model of the ocean was configured for the geometry of the southern ocean domain and then improved by including robust-diagnostic forcing and allowing for coupling to a sea-ice model. When the model was initially tested without coupling, the ocean circulation corresponded well with the observed circulation. In addition, a dynamic-thermodynamic model of sea ice was developed and tested with a constant upward oceanic heat flux. (Auth. mod.)

42-2846
Scheiner's halo: cubic ice or polycrystalline hexagonal ice?.
Weinheimer, A.J., et al, *Journal of the atmospheric sciences,* Nov. 1987, 44(21), p.3304-3308, 30 refs.
Knight, C.A.
Cubic ice, Ice crystals, Optical phenomena, Refraction.

42-2847
Interactions between glaciation, atmosphere and ocean. [Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom]
Kotliakov, V.M., ed, Moscow, Nauka, 1987, 248p., In Russian with English table of contents enclosed. Refs. p.236-247.
Grosval'd, M.G., ed.
Glaciology, Ice growth, Snow cover effect, Oceanography, Ice deterioration, Planetary environments, Maps, Climatic changes, Meteorological charts, Land ice, Mass balance, Air temperature, Sea ice distribution, Solar radiation.

42-2848
Recent glaciation and climate. [Sovremennye ledniki i klimat]
Krenke, A.N., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.6-33, In Russian.
Ice sheets, Ice deterioration, Ice shelves, Mountain glaciers, Sea ice distribution, Fast ice, Icebergs, Climatic factors, Maps, Land ice, Alimentation, Mass balance.

42-2849
Global climatic role of snow cover. [Global'naia klimaticheskaia rol' snezhnogo pokrova]
Kotliakov, V.M., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.34-65, In Russian.
Snow line, Snow melting, Soil temperature, Snow cover distribution, Human factors, Solar radiation, Climatic factors, Meteorological charts, Maps, Snow surveys, Heat transfer, Landscape types, Planetary environments, Snow depth, Spacecraft, Mass transfer, Monitors, Phase transformations.

42-2850
Sea ice and climate. [Morskie l'dy i klimat]
Zakharov, V.F., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.66-89, In Russian.
Climatic changes, Sea water freezing, Ice cover thickness, Icebergs, Sea ice distribution, Fast ice, Ice shelves, Maps, Pleistocene, Meteorological charts, Water temperature, Salinity, Ice volume, Antarctica.
Formation of sea ice in both hemispheres is discussed. The antarctic glacial situation compared to the Arctic Ocean and physical causes of sea ice impact on climatic conditions, resulting in major changes, are argued and illustrated with meteorological, oceanographic and glaciological data.

42-2851
Glaciation, oceans and Pleistocene climates: a qualitative model. [Oledenenie, okean i lednikovye klimaty pleistotsena: kachestvennaia model']
Grosval'd, M.G., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.90-117, In Russian.
Models, Pleistocene, Climatic changes, Sea ice distribution, Ice cores, Glacier alimentation, Isotope analysis, Glacier ablation, Glacier surges, Icebergs, Charts, Paleoclimatology, Water temperature, Maps, Glaciology, Ice temperature, Oceanography.

42-2852
Interactions between the ocean and ice sheets in marginal zones of continents. [Vzaimodeĭstvie lednikovykh pokrovov s okeanom v zone materikovykh okrain]
Glazovskiĭ, A.F., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.117-134, In Russian.
Ice sheets, Glacier beds, Fast ice, Shore erosion, Icebergs, Ice rafting, Water temperature, Air temperature, Land ice, Cooling rate, Glaciers, Ice erosion.

42-2853
Sea level and the global climate. [Uroven' Mirovogo okeana i global'nyĭ klimat]
Kazanskiĭ, A.B., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.135-151, In Russian.
Sea level, Sea ice distribution, Ice air interface, Air temperature, Climatic changes, Air water interactions, Ocean currents.

42-2854
Mass balance of mountain glaciers and climate. [Balans massy gornykh lednikov i klimat]
Diurgerov, M.B., Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.186-213, In Russian.
Mountain glaciers, Ice air interface, Heat transfer, Glacier mass balance, Climatic changes, Altitude, Climatology, Land ice.

42-2855
Climatic influence of a single glacier. [Vliianie otdel'nogo lednika na klimat]
Krenke, A.N., et al, Vzaimodeĭstvie oledeneniia s atmosferoĭ i okeanom (Interactions between glaciation, atmosphere and ocean) edited by V.M. Kotliakov and M.G. Grosval'd, Moscow, Nauka, 1987, p.214-234, In Russian.
Voloshina, A.P., Arapov, P.P.
Glacier ice, Atmospheric circulation, Ice surface, Microclimatology, Ice air interface, Heat transfer, Radiation balance, Heat balance.

42-2856
Mechanization of pile construction in freezing weather. [Mekhanizatsiia svaĭnykh rabot v zimnikh usloviiakh]
Bad'in, G.M., Leningrad, Stroĭizdat, 1987, 184p., In Russian with abridged English table of contents enclosed. 24 refs.
Concrete structures, Buildings, Foundations, Permafrost beneath structures, Piles, Construction equipment, Excavation, Permafrost thermal properties, Frozen ground strength, Active layer.

42-2857
Urban development in the Far North. [Gradostroitel'stvo na Kraĭnem Severe],
IAkovlev, A.V., Leningrad, Strolizdat, 1987, 182p., In Russian with abridged English table of contents enclosed. 51 refs.
Urban planning, Microclimatology, Winter maintenance, Residential buildings, Industrial buildings, Roads, Wind factors, Streets.

42-2858
Aerodynamics of the Tu-134A-3(B-3) airplane. [Aero-dinamika samoleta Tu-134A-3(B-3)],
Ligum, T.I., Moscow, Transport, 1987, 261p. (pertinent p.135-139, 219-251), In Russian.
Aircraft icing, Aircraft landing areas, Cold weather performance, Cold weather operation.

42-2859
Impact of a single black snowfall on streamwater chemistry in the Scottish Highlands.
Tranter, M., et al, *Nature,* Apr. 26, 1988, 332(6167), p.826-829, 26 refs.
Snowfall, Pollution, Water chemistry, Meltwater, United Kingdom—Scotland.

42-2860
Methane concentration in the glacial atmosphere was only half that of the preindustrial Holocene.
Stauffer, B., et al, *Nature,* Apr. 28, 1988, 332(6167), p.812-814, 15 refs.
Lochbronner, E., Oeschger, H., Schwander, J.
Ice cores, Ice composition, Atmospheric composition, Greenland, Antarctica—Byrd Station.
Air entrapped in bubbles of cold ice has essentially the same composition as that of the atmosphere at the time of bubble formation. Measurements on ice core samples from Byrd Station (Antarctica) and Dye 3 (Greenland) show that the atmospheric methane concentration was only about 350 parts per billion by volume (p.p.b.v.) during the last glaciation, compared with a mean preindustrial level of about 650 p.p.b.v. and a present value of 1,650 p.p.b.v. (Auth.)

42-2861
Collapse prediction analysis of South Pole dome due to foundation settlement.
Shugar, T.A., et al, *U.S. Naval Civil Engineering Laboratory, Port Hueneme, California. NCEL technical note,* Jan. 1988, N-1781, 34p. + 15p. appends., 31 refs.
Holland, T.J., Shoemaker, N.F.
Settlement (structural), Snow cover stability, Snow deformation, Foundations, Antarctica—Amundsen-Scott Station.
The base of the geodesic dome sheltering the Amundsen-Scott South Pole Station is distorting due to movement in the compacted snow foundation. Determination of how much longer the dome can withstand ice field motion is aided by a nonlinear finite element analysis. A description of the base ring differential displacement is obtained by a least squares analysis of foundation displacement data. The topology and geometry of the geodesic dom- have been reconstructed, and a one-to-one correspondence exists between the modeled and actual latticed framework. Two alternative approaches to structural modeling, based on the same topology, are developed and discussed. Computational results are obtained, and then displayed and analyzed using computer graphics. These results indicate that the South Pole Dome can withstand twice the load currently induced by existing foundation settlement. The structure exhibits isolated group buckling but is in no danger of general collapse at that load level. The actual level of settlement at which general collapse could occur could not be calculated. (Auth.)

42-2862
Mobile buildings and their combinations based on the principle of open structural systems. [Mobil'nye zdaniia i kompleksy na osnove otkrytykh konstruktivnykh sistem],
Karasev, N.N., Moscow, Strolizdat, 1987, 134p., In Russian with abridged English table of contents enclosed. 25 refs.
Modular construction, Permafrost beneath structures, Design, Theories.

42-2863
Designing building foundations for randomly nonhomogeneous bases and creep. [Raschet fundamentov sooruzhenĭ na sluchaĭno-neodnorodnom osnovanii pri polzuchesti],
Makarov, B.P., et al, Moscow, Strolizdat, 1987, 256p., In Russian with abridged English table of contents enclosed. 51 refs.
Kochetkov, B.E.
Plates, Foundations, Bearing strength, Settlement (structural), Soil mechanics, Rheology, Models, Soil creep, Bases, Creep, Buildings, Concrete structures.

42-2864
On the phase diagram of ice. [O fazovoĭ diagramme l'da],
Sirota, N.N., et al, *Akademiia nauk SSSR. Doklady,* 1987, 287(5), p.1112-1116, In Russian. 9 refs.
Bizhigitov, T.B.
Ice physics, Phase transformations, Ice temperature, Pressure, Ice volume, Isotherms.

42-2865
Is there anything to change. [A nado li chto-to meniat'?],
Arikaĭnen, A., et al, *Morskoĭ flot,* 1988, No.3, p.36-39, In Russian.
Burkov, G.
Ships, Ice navigation, Design, Icebreakers, Ice breaking.

42-2866
Engineering geology, hydrogeology; rational use of geological media. [Inzhenernaia geologiia, gidrogeologiia; ratsional'noe ispol'zovanie geologicheskoĭ sredy],
Sergeev, E.M., et al, *Akademiia nauk SSSR. Izvestiia. Seriia geologicheskaia,* Nov. 1987, No.11, p.23-30, In Russian. 4 refs.
Engineering geology, Hydrogeology, Geocryology, Research projects, Surveys, Mapping, Models.

42-2867
Road to the Yamal gas. [Doroga k IAmal'skomu gazu],
Maslov, V.A., et al, *Mekhanizatsiia stroitel'stva,* Nov. 1987, No.11, p.23-25, In Russian.
Talts, V.G.
Natural gas, Transportation, Railroads, Cold weather construction, Permafrost beneath structures, Embankments, Dams, Natural resources, Earthwork, Construction equipment, Tundra, USSR—Yamal Peninsula.

42-2868
Combined mechanization of construction-assembling work under difficult climatic conditions. [Kompleksnaia mekhanizatsiia stroitel'no-montazhnykh rabot v slozhnykh klimaticheskikh usloviiakh],
Talts, V.G., *Mekhanizatsiia stroitel'stva,* Oct. 1987, No.10, p.12-14, In Russian.
Permafrost beneath structures, Earthwork, Construction equipment, Winter maintenance, Transportation, Electric power, Baykal Amur railroad.

42-2869
Winter observations of iceberg frequencies and sizes in the South Atlantic Ocean.
Wadhams, P., *Journal of geophysical research,* Apr. 15, 1988, 93(C4), p.3583-3590, 19 refs.
Icebergs, Detection, Distribution, South Atlantic Ocean.
The numbers and apparent sizes of icebergs in the South Atlantic Ocean in midwinter were measured by radar and visually from FS *Polarstern* during the 1986 Winter Weddell Sea Project cruise. Results show that in a heavy sea (sea state 7-8), icebergs have to be at least 115 m in diameter to be detected at all and that detectability falls off severely for all bergs at ranges exceeding 8 n. mi. (15 km); that most bergs had diameters of less than 1 km with a preferred size of 400-500 m; and that a high density of icebergs in the latitude band 53-56S at longitude 19-30W contrasted with a virtual absence of bergs in the same latitude band at longitude 1-9E. The latter effect is ascribed to melt and wave-induced deterioration causing the disappearance of this iceberg population between the two sets of longitudes. (Auth.)

42-2870
Drift of icebergs under wind action.
Crépon, M., et al, *Journal of geophysical research,* Apr. 15, 1988, 93(C4), p.3608-3612, 17 refs.
Houssais, M.N., Saint Guily, B.
Icebergs, Drift, Wind (meteorology), Mathematical models.
The steady motion of an iceberg under wind action is studied in the presence of a mixed layer. Analytical solutions are obtained when the iceberg depth is less than or much larger than the mixed layer depth. A few numerical examples are given. The results show that winds of medium or low strength have a limited effect on the motion of deep icebergs extending below the thermocline. Furthermore, the larger the horizontal scale of the iceberg the smaller the wind drift. Hence for winds of less than 10 m/s the trajectory of deep icebergs more than 1 km long is shown to be representative of geostrophic currents. The effect of a possible "lift" force is also estimated. Equations developed in this study are based on data collected from antarctic icebergs. (Auth. mod.)

42-2871
Diagnostic study of the Fram Strait marginal ice zone during summer from 1983 and 1984 marginal ice zone experiment Lagrangian observations.
Gascard, J.C., et al, *Journal of geophysical research,* Apr. 15, 1988, 93(C4), p.3613-3641, 23 refs.
Kergomard, C., Jeannin, P.F., Fily, M.
Sea ice, Ice edge, Ocean currents, Ice floes.

42-2872
Densification process of snow/firn in the surface layer of the antarctic ice sheet.
Qin, D., *Journal of glaciology and geocryology,* 1987, 9(3), p.193-205, 25 refs., In Chinese with English summary.
Snow density, Firn, Snow compression, Snow ice interfaces, Ice sheets, Air temperature, Snow crystal growth, Antarctica—Wilkes Land.
The densification process of snow/firn in the surface layer of the antarctic ice sheet is affected by the environment. The process also is a summation of the variations in both macroscopic and microcosmic processes, and has a rich feature of geographic zonality. This process is divided into three types (warm, cold and transformed) on the basis of the studies of shallow snow/firn cores in Wilkes Land, Antarctica, and the studies of predecessors. Data on distribution and mean annual temperature of these types are presented. These three types of densification process are characterized by different macroscopic and microcosmic features, such as the diagram of density versus depth, compactive viscosity coefficient, crystal size and crystal growth rate, C axis orientation and elongation of snow/firn crystal in the snow/firn. (Auth. mod.)

42-2873
Numerical classification of glaciers by means of specific relief parameters.
Kuhle, M., *Journal of glaciology and geocryology,* 1987, 9(3), p.207-214, With Chinese summary. 25 refs.
Glacier surfaces, Glaciology, Snow line, Surface properties, Classifications, Glacier flow, Mountains.

42-2874
Ice physics—one of the most common substances continues to pose interesting problems.
Glen, J.W., *Journal of glaciology and geocryology,* 1987, 9(3), p.215-220, In Chinese.
Ice physics, Ice crystal structure, Molecular structure, Water structure, Ions.

42-2875
Thaw-consolidation behavior of seasonally frozen soils.
Tong, C., et al, *Journal of glaciology and geocryology,* 1987, 9(3), p.221-228, In Chinese with English summary.
Chen, E.
Thaw consolidation, Freeze thaw tests, Frozen ground settling, Loads (forces), Permafrost, Seasonal freeze thaw.

42-2876
Preliminary study of palaeovegetation and palaeoclimatic index in the later period of the Late Pleistocene in Northeast Plain of China.
Wang, M., *Journal of glaciology and geocryology,* 1987, 9(3), p.229-238, 17 refs., In Chinese with English summary.
Geomorphology, Climatic changes, Vegetation, Pollen, Palynology, Paleoclimatology, Pleistocene, Radioactive age determination, China.

42-2877
Atlas (1:2,000,000) of seasonal frost depths in Jilin Province.
Zhang, X., et al, *Journal of glaciology and geocryology,* 1987, 9(3), p.239-250, In Chinese with English summary.
Li, Y., Song, Z.
Maps, Frost penetration, Snow cover effect, Seasonal variations, Altitude.

42-2878
Quartz grain surface features of the Maxian Mountain in Lanzhou area and environment identification.
Fang, X., et al, *Journal of glaciology and geocryology,* 1987, 9(3), p.251-256, 6 refs., In Chinese with English summary.
Mou, Y., Xi, X.
Glacial deposits, Surface properties, Scanning electron microscopy, Geomorphology, Sands, Talus, Glaciation, Paleoclimatology, Mountains, China—Maxian Mountains.

42-2879
First discovery of ice wedges in northeast China.
Jia, M., et al, *Journal of glaciology and geocryology,* 1987, 9(3), p.257-260, 2 refs., In Chinese with English summary.
Yuan, F., Cheng, G.
Ice wedges, Discontinuous permafrost, Air temperature, Precipitation (meteorology), China.

42-2880
Primary observations of the deformation of snow cornice.
Zhang, Z., et al, *Journal of glaciology and geocryology*, 1987, 9(3), p.261-266, 3 refs., In Chinese with English summary.
Wang, W.
Snow cornices, Snow surface, Avalanche formation, Surface properties, Mountains, Snow deformation, Shear stress, Air temperature, Strains.

42-2881
Method of testing the horizontal frost-heaving force of the retaining wall.
Sui, T., et al, *Journal of glaciology and geocryology*, 1987, 9(3), p.267-272, In Chinese with English summary.
Na, W.
Frost heave, Loads (forces), Walls, Tests.

42-2882
Compilation of glacier maps for some mountains in west China.
Gu, P., et al, *Journal of glaciology and geocryology*, 1987, 9(3), p.273-278, In Chinese with English summary.
Bu, J.
Mountain glaciers, Glacier surveys, Photography, Maps, Aerial surveys, Distribution.

42-2883
Prewetting aids Canadian snow control. *Better roads*, Nov. 1987, 57(11), p.34-36.
Snow removal, Snow water content, Sanding, Salting, Road maintenance, Winter maintenance, Cold weather performance, Admixtures, Canada.

42-2884
Kinetic approach to crystallization from ionic solution. 1. Crystal growth.
Chiang, P.-P., et al, *Journal of colloid and interface science*, Mar. 1988, 122(1), p.230-250, 87 refs.
Donohue, M.D.
Crystal growth, Solutions, Ions, Phase transformations, Adsorption, Analysis (mathematics).

42-2885
Kinetic approach to crystallization from ionic solution. 2. Crystal nucleation.
Chiang, P.-P., et al, *Journal of colloid and interface science*, Mar. 1988, 122(1), p.251-265, 44 refs.
Donohue, M.D., Katz, J.L.
Crystals, Nucleation, Solutions, Ions, Thermodynamics, Crystal growth, Mathematical models.

42-2886
Statistics of the sea surface temperature of the Baltic Sea 21 October-1 March (1965-1986).
Grönvall, H., et al, *Finnish marine research. Supplement*, 1987, No.254, 97p., With Finnish summary. 4 refs.
Sea water, Water temperature, Surface temperature, Ice conditions, Synoptic meteorology, Temperature distribution, Statistical analysis, Charts, Sea ice, Baltic Sea.

42-2887
Stability and deformation of bases beneath anchor foundations. ¡Ustoĭchivost' i deformiruemost' osnovaniĭ ankernykh fundamentov¿.
Boldyrev, G.G., Moscow, Strolizdat, 1987, 81p., In Russian. 21 refs.
Anchors, Steel structures, Soil stabilization, Foundations, Sands, Design, Fines, Clays, Clay soils.

42-2888
Maintenance and reliable operating conditions on highways. ¡Usloviia ekspluatatsii i nadezhnost' raboty avtomobil'nykh dorog¿.
Slobodchikov, IU.V., Moscow, Transport, 1987, 128p., In Russian with abridged English table of contents enclosed. 52 refs.
Roads, Permafrost beneath structures, Pavements, Construction materials, Winter maintenance, Road icing, Frost heave, Roadbeds, Embankments.

42-2889
Consumption of salt on roads during winter depending of the intensity of the winter. ¡Salzverbrauch beim Strassenwinterdienst in Abhängigkeit von der Winterintensität¿.
Speth, O., *Strasse und Autobahn*, Feb. 1988, 39(2), p.50-56, In German. 5 refs.
Salting, Road icing, Ice removal, Snow removal, Winter maintenance, Road maintenance, Meteorological factors.

42-2890
Remote sensing and image interpretation.
Lillesand, T.M., et al, New York, John Wiley & Sons, 1987, 721p. (Pertinent p.264-284), Second edition. Refs. passim.
Kiefer, R.W.
Remote sensing, Photointerpretation, Glacier ice, Aerial surveys, Ice sheets, Landforms, Lacustrine deposits, Topographic features, Moraines, Outwash, Sediments.

42-2891
Sea ice processes.
Lewis, J.K., et al, *Science Application International Corporation. SAIC report*, Jan. 1988, SAIC-87/1870, 18p., 15 refs.
Giuffrida, M.R., Denner, W.W.
Sea ice, Ice mechanics, Ice forecasting, Thermodynamics, Mathematical models, Velocity, Seasonal variations, Heat flux, Snow cover effect.

42-2892
Vertically integrated snow/ice model over land/sea for climate models. 1. Development.
Neeman, B.U., et al, *Journal of geophysical research*, Apr. 20, 1988, 93(D4), p.3663-3675, 25 refs.
Joseph, J.H., Ohring, G.
Sea ice, Snow heat flux, Ice heat flux, Climate, Models.

42-2893
Vertically integrated snow/ice model over land/sea for climate models. 2. Impact on orbital change experiments.
Neeman, B.U., et al, *Journal of geophysical research*, Apr. 20, 1988, 93(D4), p.3677-3695, 55 refs.
Joseph, J.H., Ohring, G.
Sea ice, Snow cover, Heat balance, Insolation, Climate, Models.

42-2894
Under ice grazing by planktonic, calcanoid copepods in relation to a bloom of ice microalgae in southeastern Hudson Bay.
Runge, J.A., et al, *Limnology and oceanography*, Mar. 1988, 33(2), p.280-286, 19 refs.
Ingram, R.G.
Plankton, Algae, Ice water interface, Canada—Hudson Bay.

42-2895
Industrial activities and landscape transformation. ¡Tekhnogenez i transformatsiia landshaftov¿.
Volkova, V.G., et al, Novosibirsk, Nauka, 1987, 189p., In Russian with abridged English table of contents enclosed. Refs. p.181-186.
Davydova, N.D.
Electric power, Fuels, Pollution, Precipitation (meteorology), Chemical composition, Landscape types, Vegetation, Forest soils, Taiga, Cryogenic soils.

42-2896
Relationship between glacial mass balance equilibrium line and climate.
Yao, T., *Journal of glaciology and geocryology*, 1987, 9(4), p.289-300, 7 refs., In Chinese with English summary.
Albedo, Glacier mass balance, Glacier oscillation, Climatic factors, Precipitation (meteorology), Temperature effects.

42-2897
Primary study of the relationship between glacial mass balance and climate in the "July First" Glacier.
Liu, C., et al, *Journal of glaciology and geocryology*, 1987, 9(4), p.301-310, 8 refs., In Chinese with English summary.
Xie, Z.
Glacier mass balance, Climatic factors, Mountains, Air temperature, Precipitation (meteorology), Glacier melting, Glacier ablation.

42-2898
Approach to some problems on the alpine periglacial processes in continental climate.
Zhang, T., et al, *Journal of glaciology and geocryology*, 1987, 9(4), p.311-318, 17 refs., In Chinese with English summary.
Wang, S.
Periglacial processes, Altiplanation, Permafrost, Climatic factors, Mountains, Frost weathering, Slope processes, Air temperature.

42-2899
Division of the Holocene moraine strata and their chronology in Western mountainous area of China.
Chen, J., *Journal of glaciology and geocryology*, 1987, 9(4), p.319-328, 19 refs., In Chinese with English summary.
Moraines, Glaciation, Glacier oscillation, Mountains, Paleoclimatology, Climatic changes, Age determination, China.

42-2900
Study of the uniaxial compressive strength of the Bohai sea ice.
Meng, G., et al, *Journal of glaciology and geocryology*, 1987, 9(4), p.329-338, 8 refs., In Chinese with English summary.
Zhang, M., Li, Z., Yan, D.
Ice strength, Compressive properties, Sea ice, Ice crystal structure, Strains.

42-2901
Preliminary experimental study of the quality of anti-heave coarse-bedding in canals.
Li, Z., *Journal of glaciology and geocryology*, 1987, 9(4), p.339-346, 5 refs., In Chinese with English summary.
Frost heave, Frost penetration, Frost resistance, Channels (waterways), Countermeasures, Damage, Grain size.

42-2902
Preliminary research on the Mid- and Late-Holocene glacial fluctuations in Tianger Peak II regions, Tianshan Mountains.
Chen, J., *Journal of glaciology and geocryology*, 1987, 9(4), p.347-356, 15 refs., In Chinese with English summary.
Moraines, Glaciation, Glacier oscillation, Geomorphology, Paleoclimatology, Mountains, Age determination.

42-2903
Ice formation in solution and the electric potential at the freezing and melting point.
Liu, Z., et al, *Journal of glaciology and geocryology*, 1987, 9(4), p.357-362, 8 refs., In Chinese with English summary.
Sun, L.
Ice formation, Solutions, Electric potential, Freezing points, Melting points.

42-2904
Discussion on the classification index of the frost heave of the canal base soil.
Zhou, C., *Journal of glaciology and geocryology*, 1987, 9(4), p.363-367, 2 refs., In Chinese with English summary.
Frost heave, Soil water, Frost resistance, Sands, Classifications, Water content, Drainage, Gravel.

42-2905
Analysis of two blizzard synoptic regimes on the upper reaches of the Yili River in the Tianshan Mountains.
Wang, C., *Journal of glaciology and geocryology*, 1987, 9(4), p.369-374, 1 ref., In Chinese with English summary.
Snowstorms, Synoptic meteorology, Snow depth, Mountains, Wind velocity, China—Tian Shan.

42-2906
Amino acids on ice.
Sykes, G.A., *Chemistry in Britain*, Mar. 1988, 24(3), p.235-240, 244, 28 refs.
Age determination, Pleistocene, Paleoclimatology, Paleoecology.

42-2907
Relationship between hydrogen and sulphate ions in precipitation—a numerical analysis of rain and snowfall chemistry.
Lefohn, A.S., et al, *Environmental pollution*, 1988, Vol.49, p.289-311, 21 refs.
Krupa, S.V.
Precipitation (meteorology), Snow composition, Pollution, Ions.

42-2908
Mathematical approach to crystal growth.
Caginalp, G., *Superlattices and microstructures*, Nov. 1987, 3(6), p.595-598, 11 refs.
Crystal growth, Stefan problem.

42-2909
Strategy of wind tolerance by *Salix uva-ursi*, a tundran species of New Quebec (Canada). [Stratégie de tolérance au vent chez *Salix uva-ursi*, une espèce de la toundra du Nouveau-Québec (Canada)],
Bélisle, L., et al, *Canadian journal of botany*, Feb. 1988, 66(2), p.272-279, In French with English summary. 43 refs.
Maillette, L.
Tundra, Plant physiology, Wind factors.

42-2910
North America and adjacent oceans during the last deglaciation.
Ruddiman, W.F., ed, Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, 501p. + 2 maps, Refs. passim. For selected papers see 42-2911 through 42-2925.
Wright, H.E., Jr., ed.
Glaciation, Ice sheets, Paleoclimatology, Oceans, Pleistocene, Ice dating, Climatic changes, Glacier oscillation, Ice melting.

42-2911
Late Wisconsin Glaciation and deglaciation of the Laurentide Ice Sheet.
Andrews, J.T., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.13-37, Refs. p.33-37.
Glaciation, Ice sheets, Paleoclimatology, Ice conditions, Ice dating, Ice melting, Pleistocene, Climatic changes, Distribution.

42-2912
Proglacial lakes and the southern margin of the Laurentide Ice Sheet.
Teller, J.T., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.39-69, Refs. p.66-69.
Glacial lakes, Glaciation, Paleoclimatology, Ice sheets, Ice melting, Climatic changes, Lacustrine deposits, Quaternary deposits, Sedimentation.

42-2913
Timing and processes of deglaciation along the southern margin of the Cordilleran ice sheet.
Booth, D.B., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.71-90, Refs. p.88-90.
Glaciation, Climatic changes, Ice edge, Ice melting, Mountains, Glacier oscillation, Time factors, Ice sheets.

42-2914
Ice core and other glaciological data.
Paterson, W.S.B., et al, North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.91-109, Refs. p.107-109.
Hammer, C.U.
Ice cores, Ice dating, Ice sheets, Climatic changes, Pleistocene, Paleoclimatology, Glaciation, Oxygen isotopes, Precipitation (meteorology).

42-2915
Oxygen-isotope record of glaciation.
Mix, A.C., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.111-135, Refs. p.133-135.
Glaciation, Paleoclimatology, Ice dating, Climatic changes, Ice volume, Fossils, Oxygen isotopes.

42-2916
Northern oceans.
Ruddiman, W.F., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.137-154, Refs. p.152-154.
Oceans, Sea ice distribution, Paleoclimatology, Meltwater, Ice conditions, Climatic changes, Pleistocene, Ice water interface.

42-2917
Glacial isostasy, mantle viscosity, and pleistocene climatic change.
Peltier, W.R., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.155-182, Refs. p.180-182.
Ice sheets, Ice volume, Pleistocene, Paleoclimatology, Climatic changes, Isostasy.

42-2918
Ice dynamics and deglaciation models when ice sheets collapsed.
Hughes, T., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.183-220, Refs. p.217-220.
Ice mechanics, Glaciation, Paleoclimatology, Geomorphology, Climatic changes, Ice sheets, Pleistocene, Glacier oscillation.

42-2919
River responses.
Schumm, S.A., et al, North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.221-240, Refs. p.239-240.
Brakenridge, G.R.
Glaciation, River flow, Paleoclimatology, Climatic changes, Hydrology, Channels (waterways).

42-2920
Physical record of lakes in the Great Basin.
Benson, L., et al, North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.241-260, Refs. p.258-260.
Thompson, R.S.
Lakes, Paleoclimatology, Ice cover effect, Ice sheets, Climatic changes, Pleistocene.

42-2921
Late Quaternary paleoclimate records from lacustrine ostracodes.
Forester, R.M., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.261-276, Refs. p.275-276.
Lacustrine deposits, Quaternary deposits, Paleoclimatology, Fossils, Hydrology, Precipitation (meteorology), Pleistocene.

42-2922
Patterns and rates of vegetation change during the deglaciation of eastern North America.
Jacobson, G.L., Jr., et al, North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.277-288, Refs. p.287-288.
Webb, T., III, Grimm, E.C.
Vegetation, Glaciation, Climatic changes, Paleoecology, Paleoclimatology, Palynology, Pollen.

42-2923
Northwestern U.S. during deglaciation; vegetational history and paleoclimatic implications.
Barnosky, C.W., et al, North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.289-321, Refs. p.318-321.
Anderson, P.M., Bartlein, P.J.
Vegetation, Paleoclimatology, Glaciation, Paleoecology, Pleistocene, Alpine glaciation, Climatic changes.

42-2924
Synthesis; the ocean ice/sheet record.
Ruddiman, W.F., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.463-478, Refs. p.477-478.
Glaciation, Paleoclimatology, Ice water interface, Oceans, Ice sheets, Ice volume, Oxygen isotopes, Models, Pleistocene.

42-2925
Synthesis; the land south of the ice sheets.
Wright, H.E., Jr., North America and adjacent oceans during the last deglaciation. Edited by W.F. Ruddiman and H.E. Wright, Jr., Geology of North America, Vol.K-3, Boulder, CO, Geological Society of America, 1987, p.479-488, Refs. p.487-488.
Periglacial processes, Ice sheets, Permafrost distribution, Paleoecology, Climatic changes, Fossils.

42-2926
Wetting of polystyrene and urethane roof insulations in the laboratory and on a protected membrane roof.
Tobiasson, W., et al, *American Society for Testing and materials. Special technical publication*, 1988, No.922, MP 2011, p.421-430, Revision of 40-2549. 13 refs.
Greatorex, A., Van Pelt, D.
Roofs, Thermal insulation, Polymers, Cellular plastics, Moisture, Temperature gradients, Tests.
When subjected to a sustained temperature gradient in the presence of moisture in laboratory wetting tests, urethane and expanded polystyrene roof insulations accumulate enough moisture to reduce their insulating ability significantly. Extruded polystyrene is quite resistant to moisture in such tests. But the vapor drive is not as great in actual roofs, and it may reverse direction, thereby seasonally drying the insulation. To determine how well the laboratory tests could predict the wetting rate of insulation in actual protected membrane roofs, extruded and expanded polystyrene and urethane insulations were installed in a protected membrane roof in Hanover, New Hampshire. After three years of exposure, little moisture had accumulated in the extruded polystyrene, and it still retained essentially all of its initial insulating ability. Moisture progressively accumulated in 16-kg/cu m (1-lb/cu ft) and 30-kg/cu m (1.9-lb/cu ft) expanded polystyrene insulations, and at the end of the test they retained only about 30 and 40% of their initial thermal resistance, respectively. The urethane accumulated enough moisture to reduce its insulating ability to about 30% of its dry value. The laboratory tests provided a valuable indication of the potential long-term moisture gain of these insulations when installed in protected membrane roofs in cold regions.

42-2927
Gravity stresses in subantarctic landscapes: preliminary observations on Possession Island, Crozet Islands (French Austral and Antarctic Territories). [Les contraintes de gravité sur les paysages subantarctiques: observations préliminaires à l'Ile de la Possession, Archipel Crozet (Terres Australes et Antarctiques Françaises)],
Bougère, J., *Comité national français des recherches antarctiques. CNFRA*, 1987, No.58, p.43-55, In French with English summary. 12 refs.
Slope processes, Climatic changes, Frost weathering, Possession Island.
The influence of gravity stresses on subantarctic landforms is examined, using Possession I. as an example, from 3 points of view: geology, biology and climate. Morphological evidence of processes which shaped slopes, cliffs and ledges is presented in the form of illustrations and photographs. Two dominant environmental factors, the low temperature and high wind velocity affecting the vegetation's population and type distribution, are considered.

42-2928
Soil characteristics and pedogenic processes of the fell-fields of Possession Island, Crozet Islands. [Caractéristiques des sols et processus pédogénétiques sur les fell-field d'une île subantarctique: l'Ile de la Possession, archipel Crozet],
Frenot, Y., *Comité national français des recherches antarctiques. CNFRA*, 1987, No.58, p.57-72, In French with English summary. Refs. p.70-72.
Geocryology, Periglacial processes, Freeze thaw cycles, Possession Island.
Results of studies of fellfield soil on Possession I., Crozet archipelago, are presented. The major pedogenic factors at altitudes over 150 m above sea level, such as wind, rain, and frequent freeze thaw cycles, which are responsible for the desert ground and some microtopographic features of the surface—stone nests and soil stripes similar to the patterned ground of the Northern Hemisphere—are discussed. Structural phenomena are illustrated and show that the chemical weathering of basalt is very active, particularly by the presence of gypsite in fractions of clay.

42-2929
Large scale changes in ice conditions of seas in the North-European Basin. [Krupnomasshtabnaia izmenchivost' sostoianiia ledianogo pokrova morei Severo-Evropeiskogo basseina],
Zubakin, G.K., Leningrad, Gidrometeoizdat, 1987, 160p., In Russian with English table of contents enclosed. 217 refs.
Drift, Sea ice distribution, Ice conditions, Ice forecasting, Synoptic meteorology, Ice formation, Ice growth, Periodic variations, Arctic Ocean.

42-2930
Method of outposts in the economic development of the North. [Vakhtovyĭ metod osvoeniia prirodnykh resursov Severa]
Sapozhnikov, P.S., et al, Moscow, Nedra, 1988, 158p., In Russian with abridged English table of contents enclosed. 18 refs.
Chudnovskiĭ, A.D.
Petroleum industry, Subpolar regions, Economic development, Cost analysis, Construction, Transportation.

42-2931
Melting history of the Late Pleistocene antarctic ice sheet.
Nakada, M., et al, *Nature*, May 5, 1988, 333(6168), p.36-40, 34 refs.
Lambeck, K.
Ice sheets, Pleistocene, Climatic changes, Isostasy.
Spatial and temporal variations in the sea levels of the past 20,000 years around the globe place constraints on the melting history of the major Late Pleistocene ice sheets. The antarctic ice sheets provided a significant contribution to the sea-level rise at a rate that was approximately synchronous with the melting of the Laurentide ice sheet, except for the interval 9,000-6,000 years ago, when it may have lagged behind. Minor melting of the antarctic ice sheet continued throughout the Holocene. (Auth.)

42-2932
Hydrographic observations in the northwestern Weddell Sea marginal ice zone during March 1986.
Husby, D.M., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum NMFS*, Jan. 1988, NOAA-TM-NMFS-SWFC-106, 33p., PB88-173 240, 7 refs.
Muench, R.D.
Hydrography, Sea water, Chemical composition, Ice edge, Antarctica—Weddell Sea.
Temperature and salinity observations were made from the surface down to 1500 m to sample the 3 water masses characterizing the region. The uppermost, Surface Water, layer extended to 30-50 m, had temperatures from near freezing (-1.8 C) up to about 0 C and salinities of 33-34 ppt. A layer of Weddell Winter Water underlay the Surface Water, extending to about 100 m, and had temperatures of -1.5 to -1.7 C and a salinity of about 34.46 ppt. The Weddell Warm Deep Water extended from the bottom of the Winter Water to more than 1500 m, displaying temperature increasing with depth to a maximum of about 0.5 C near 500 m then decreasing to 1500 m. Salinity increased with depth in this layer to about 34.67 ppt near 500 m, then decreased slightly at greater depths. A warm core having temperatures greater than 0.5 C was present near 500 m depth in the westernmost part of the study region. The temperature maximum region within the Warm Deep Water decreased in depth eastward, toward the center of the gyre, within this core. The baroclinic circulation, expressed as dynamic topography of the surface relative to the 1500 db level, was insignificant throughout the region. (Auth.)

42-2933
Adhesion of wheels to pavement in freezing weather. [Stseplenie kolesa s pokrytiem zimoĭ]
Zonov, IU.B., *Avtomobil'nye dorogi*, Oct. 1987, No.10, p.13-14, In Russian. 2 refs.
Icing, Pavements, Vehicle wheels, Adhesion, Roads, Snow cover, Glaze.

42-2934
Rating the coefficient of adhesion. [K voprosu normirovaniia koeffitsienta stsepleniia]
Pratusiavichius, S.IU., et al, *Avtomobil'nye dorogi*, Oct. 1987, No.10, p.14-15, In Russian. 1 ref.
Nasutavichius, R.A.
Pavements, Vehicle wheels, Adhesion, Roads, Icing.

42-2935
Increasing the stability of pavement plates against aggressive climatic factors. [Povyshenie stoĭkosti plit sbornykh dorozhnykh pokrytiĭ k agressivnym klimaticheskim faktoram]
Sukhanov, S.V., et al, *Avtomobil'nye dorogi*, Oct. 1987, No.10, p.15-17, In Russian.
Timofeeva, I.B., Pluzhnikov, V.V., Surko, IU.A.
Pavements, Reinforced concretes, Icing, Plates, Frost resistance, Frost penetration, Frost shattering, Roads.

42-2936
Influence of organic matter in soils and ground waters on service life of foundations. [Vliianie organicheskogo veshchestva grunta i gruntovykh vod na dolgovechnost' osnovaniia]
Goncharova, L.V., et al, *Avtomobil'nye dorogi*, Oct. 1987, No.10, p.17-18, In Russian.
Baranova, V.I.
Roadbeds, Foundations, Organic soils, Frost penetration, Ground water, Soil stabilization, Soil cement, Peat, Roads, Fines, Swamps, Frost resistance, Clays.

42-2937
Wind power at the service of road construction. [Energiia vetra na sluzhbe dorozhnogo stroitel'stva]
Khomutetskiĭ, V.A., et al, *Avtomobil'nye dorogi*, Oct. 1987, No.10, p.18-19, In Russian.
Barinov, A.K.
Roads, Earthwork, Wind power generation, Roadbeds, Electric power, Subarctic landscapes.

42-2938
Alaska snow surveys and Federal-State-private cooperative snow surveys.
Clagett, G.P., U.S. Soil Conservation Service, Anchorage, AK, May 1, 1987, 31p.
Snow surveys, Snow depth, Snow water content, Snow cover, Stream flow, Precipitation (meteorology), Air temperature, United States—Alaska.

42-2939
Alaska snow surveys and Federal-State-private cooperative snow surveys.
Clagett, G.P., U.S. Soil Conservation Services, Anchorage, AK, Mar. 1, 1988, 29p.
Snow surveys, Snow depth, Snow water content, Snow accumulation, Stream flow, Forecasting, Precipitation (meteorology), Watersheds, Statistical analysis, United States—Alaska.

42-2940
Northeast Yukon: development within a conservation framework.
Livingstone, D., *Canada. Department of Indian and Northern Affairs. Environmental studies*, 1987, No.49, 171p., Refs. p.162-171.
Environmental impact, Ports, Icing, Permafrost, Snowfall, Temperature distribution, Visibility, Waste disposal, Oil spills, Canada—Yukon Territory.

42-2941
Wind transport of snow.
Pomeroy, J.W., Saskatoon, University of Saskatchewan, Jan. 1988, 226p., Ph.D. thesis. Refs. p.177-184.
Blowing snow, Snow mechanics, Wind velocity, Mass transfer, Models, Sublimation, Measuring instruments, Snowfall, Boundary layer, Air temperature.

42-2942
Ice accretion on wires and anti-icing induced by Joule effect.
Personne, P., et al, *Journal of applied meteorology*, Feb. 1988, 27(2), p.101-114, 20 refs.
Gayet, J.F.
Power line icing, Ice formation, Air temperature, Ice prevention, Heating.

42-2943
Model for the formation and melting of ice on surface waters.
De Bruin, H.A.R., et al, *Journal of applied meteorology*, Feb. 1988, 27(2), p.164-173, 19 refs.
Wessells, H.R.A.
Lakes, Channels (waterways), Ice growth, Ice melting, Models.

42-2944
Observer's guide to the glaciers of Prince William Sound, Alaska.
Lethcoe, N.R., Valdez, AK, Prince William Sound Books, 1987, 151p., Refs. p.146-148.
Glacier mass balance, Glacial deposits, Moraines, Calving, Distribution, Mountains, Manuals, United States—Alaska—Prince William Sound.

42-2945
Frost resistance of prestressed concretes after steam-curing. [Morozostoĭkost' napriagaiushchikh betonov posle proparivaniia]
Afrapetov, G.A., et al, *Beton i zhelezobeton*, Sep. 1987, No.9, p.23-24, In Russian. 3 refs.
Panchenko, A.I., Nesvetaev, G.V.
Concrete curing, Concrete strength, Frost resistance, Cements, Prestressed concretes, Reinforced concretes.

42-2946
Stability of prestressed reinforcement in concretes containing additives. [Stoĭkost' prednapriazhennoĭ armatury v betone s dobavkami]
D'iachenko, IU.K., et al, *Beton i zhelezobeton*, Sep. 1987, No.9, p.41-42, In Russian.
Concrete admixtures, Prestressed concretes, Steels, Corrosion, Frost resistance, Reinforced concretes.

42-2947
Phytomass of some tundra types on Wrangel Island. [Rastitel'naia massa nekotorykh tipov tundry ostrova Vrangelia]
Ignatenko, I.V., et al, *Botanicheskiĭ zhurnal*, 1987, 72(12), p.1636-1649, In Russian. Refs. p.1648-1649.
Oganesian, A.Sh.
Tundra, Plant ecology, Vegetation patterns, Microrelief, Patterned ground, Ecosystems, Geocryology, Arctic landscapes, Subarctic landscapes.

42-2948
About the southern tundras. [O iuzhnykh tundrakh]
Kozhevnikov, IU.P., *Botanicheskiĭ zhurnal*, 1988, 73(1), p.65-74, In Russian. 22 refs.
Tundra, Vegetation, Forest tundra, Subarctic landscapes, Vegetation patterns, Plant ecology, Ecosystems, USSR—Taymyr Peninsula, USSR—Chukotskiy Peninsula.

42-2949
Revegetation of pine forests. [Vosproizvodstvo khvoĭnykh lesov]
Tiurin, E.G., *Lesnoe khoziaĭstvo*, 1987, No.9, p.42-45, In Russian. 10 refs.
Cryogenic soils, Forestry, Revegetation, Forest land.

42-2950
Freezing of unstable water-bearing rocks with supercooled air. [Zamorazhivanie neustoĭchivykh vodonosnykh porod nizkotemperaturnym vozdukhom]
Shterenberg, M., et al, *Metrostroĭ*, 1987, No.2, p.11-12, In Russian.
Nepomniashchiĭ, S.
Earthwork, Soil water, Excavation, Artificial freezing, Soil freezing, Construction equipment, Tunnels, Underground facilities, Underground pipelines.

42-2951
Studies on the hardness of wet snow and its decrease due to solar radiation.
Izumi, K., *Niigata. University. Research Institute for Hazards in Snow Areas. Annual report*, 1987, No.9, p.1-42, 14 refs.
Snow hardness, Wet snow, Avalanche formation, Snow density, Snow water content, Solar radiation.

42-2952
Investigations of groundwater by automatic observation system at Matunoyamakoshi landslide.
Yoshida, S., et al, *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report*, 1987, No.9, p.99-114, 3 refs., In Japanese with English summary.
Ground water, Landslides, Snow cover effect, Water pressure, Water level, Drainage, Rain.

42-2953
Developments of an observation system for groundwater in landslide areas.
Sato, O., et al, *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report*, 1987, No.9, p.115-124, 3 refs., In Japanese with English summary.
Ground water, Landslides, Snowmelt, Water level, Rain, Water temperature, Electrical resistivity, Snow depth.

42-2954
Site investigation on frost damages of roads at highland.
Aoyama, K., et al, *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report*, 1987, No.9, p.145-150, 3 refs., In Japanese with English summary.
Fukuda, M.
Frost heave, Embankments, Pavements, Damage, Roads.

42-2955
Bending test of multi-layer ice including sand particles.
Kobayashi, S., et al, *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report*, 1987, No.9, p.151-157, 3 refs., In Japanese with English summary.
Ice strength, Ice breaking, Ice composition, Flexural strength, Sands, Experimentation.

42-2956
Measurements of viscosity in snow jam.
Kobayashi, S., et al, *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report*, 1987, No.9, p.159-165, 4 refs., In Japanese with English summary.
Snow plasticity, Snow physics, Viscosity, Snow water content, Measuring instruments, Plastic flow.

42-2957
Meteorological data at Yamakoshi, Niigata Prefecture, during the winter of 1982-1983.
Izumi, K., et al, *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report,* 1987, No.9, p.173-178, 1 ref., In Japanese with English summary.
Aoyama, K., Nakamata, S.
Meteorological data, Snowfall, Snow accumulation, Statistical analysis.

42-2958
Organization and activities of the Research Institute for Hazards in Snowy Areas, Niigata University, Japan. (1987). *Niigata. University. Research Institute for Hazards in Snowy Areas. Annual report,* 1987, No.9, p.179-215, In Japanese with English summary.
Research projects, Organizations, Snow accumulation, Snowfall, Landslides, Snowmelt, Slope stability, Avalanches.

42-2959
Snow, ice and water of mountain glaciers; meeting held in Zurich, Jan. 26, 1988. ¡Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich¡ *Zurich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, 403p., In German, English and French with English summaries. Refs. passim. For individual papers see 42-2960 through 42-2981.
Glacier surveys, Snow surveys, Ice surveys, Avalanches, Alpine glaciation, Mountain glaciers.

42-2960
Mass balance of Gries Glacier from 1961 to 1986; comparing different determination methods. ¡Massenbilanz des Griesgletschers von 1961 bis 1986. Vergleich verschiedener Bestimmungsverfahren¡
Aellen, M., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.9-50, 12 refs., In German with English summary.
Funk, M.
Glacier mass balance, Glacier thickness, Ice volume, Mathematical models, Statistical analysis.

42-2961
Instabilities of the equilibrium line altitude in Greenland by climatic warming.
Ambach, W., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.51-57, With German summary. 8 refs.
Glacier melting, Ice sheets, Ice melting, Glacier heat balance, Snow line, Carbon dioxide, Climatic changes, Altitude, Greenland.

42-2962
Rhone Glacier 1850: consideration of ice mechanics in connection with a historic glaciation. ¡Rhonegletscher 1850: eismechanische Überlegungen zu einem historischen Gletscherstand¡
Haeberli, W., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.59-70, 14 refs., In German with English summary.
Schweizer, J.
Glacier flow, Paleoclimatology, Glaciation, Shear stress, Glacier beds, Basal sliding, Climatic factors.

42-2963
Effect of the variation of glacier size on runoff and mass balance of a glacier. ¡Zum Einfluss einer Änderung der Gletschergrösse auf den Wasserabfluss und den Massenhaushalt eines Gletschers¡
Kasser, P., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.71-85, 22 refs., In German with English summary.
Siegenthaler, H.
Glacier mass balance, Glacial hydrology, Glacier oscillation, Ice volume, Runoff, Climatic factors, Altitude, Snow line.

42-2964
Effects of extended climatic warming on snow and ice. ¡Folgen einer langfristigen Erwärmung für Schnee und Eis¡
Kuhn, M., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.87-98, 12 refs., In German with English summary.
Climatic changes, Mountain glaciers, Snow surveys, Ice surveys, Glacier mass balance, Runoff, Sea level, Alpine glaciation, Seasonal variations.

42-2965
Analysis of the evolution of Gruben Glacier in the Lake 3 area by a simple model. ¡Betrachtungen zur Entwicklung des Grubengletschers im Bereich des Sees 3 anhand eines einfachen Modelles¡
Müller, P., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.99-108, 7 refs., In German with English summary.
Glacier tongues, Glacier mass balance, Calving, Glacial lakes, Profiles, Models.

42-2966
Role of glaciers in a climatic change.
Ohmura, A., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.109-126, With German summary. 17 refs.
Glacier oscillation, Glacial meteorology, Climatic changes, Latent heat, Glacier ice, Solar radiation.

42-2967
Alpine glacier fluctuations and climatic changes over the last century.
Reynaud, L., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.127-146, 18 refs.
Glacier oscillation, Alpine glaciation, Climatic changes, Glacier mass balance, Mountains, Glacial meteorology, Glacier beds, Ice mechanics, Glacier flow.

42-2968
Suspended sediment and solute delivery to meltwaters beneath an alpine glacier.
Collins, D.N., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.147-161, 17 refs.
Suspended sediments, Meltwater, Mountain glaciers, Glacier melting, Subglacial drainage, Solutions, Turbulent flow, Seasonal variations.

42-2969
How useful is continuum thermodynamics to formulate concepts of ice sheet dynamics.
Hutter, K., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.163-210, With German summary. 4 refs.
Engelhardt, H.
Ice sheets, Ice mechanics, Thermodynamics, Glacier flow, Impurities, Grain size, Ice crystal structure, Analysis (mathematics), Sediments.

42-2970
Adaption of the hot-water-drilling method for drilling to great depth.
Iken, A., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.211-229, 19 refs.
Ice drills, Thermal drills, Boreholes, Glacier beds, Heat transfer, Equipment, Thermal conductivity.

42-2971
Some particular characteristics of glacial runoff. ¡Über einige Besonderheiten glazialer Abflüsse¡
Lang, H., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.231-239, 20 refs.
Runoff, Glacial hydrology, Glacier melting, Metamorphism (snow), Subglacial drainage, Alpine glaciation.

42-2972
Observations of flood runoff from a mountain glacier (Vernagtferner, Ötztal Alps). ¡Beobachtungen zum Hochwasserabfluss von einem Alpengletscher (Vernagtferner, Ötztaler Alpen)¡
Oerter, H., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.241-256, 10 refs., In German with English summary.
Reinwarth, O.
Floods, Glacier melting, Mountain glaciers, Runoff, Meltwater, Precipitation (meteorology).

42-2973
Air inclusions in glacier ice. ¡Lufteinschlüsse im Gletschereis¡
Stauffer, B., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.257-269, 19 refs., In German with English summary.
Glacier ice, Ice composition, Bubbles, Firn, Ice lenses.

42-2974
Icefalls from Fletschhorn Glacier. ¡Eislawinen vom Fletschhorngletscher¡
Alean, J., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.271-285, 8 refs., In German with English summary.
Schmid, W.
Ice mechanics, Icefalls, Avalanche deposits.

42-2975
Natural release of snow slabs. [Aspekte der natürlichen Schneebrettauslösung],
Gubler, H., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.287-305, 34 refs., In German with English summary.
Snow slides, Snow mechanics, Fracturing, Brittleness, Models, Shear strain.

42-2976
Experiments on the deposition by laboratory powder snow avalanches.
Hermann, F., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.307-321, With German summary. 5 refs.
Scheiwiller, T.
Avalanche deposits, Avalanche tracks, Slope orientation, Experimentation, Photography.

42-2977
Some implications deduced from laboratory experiments on granular avalanches.
Hutter, K., et al, *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.323-344, With German summary. 28 refs.
Pitas, C., Maeno, N.
Avalanche mechanics, Avalanche tracks, Avalanche deposits, Surface roughness, Slope orientation, Experimentation, Photography, Grain size, Rheology.

42-2978
From research to application: reflections on certain pitfalls. [De la recherche à son application: reflexions sur certains écueils],
Jaccard, C., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.345-352, 15 refs., In French with English summary.
Avalanches, Snow mechanics, Research projects.

42-2979
Propagation of shear fracture in snow cover. [Scherrissfortpflanzung in der Schneedecke],
Salm, B., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.353-370, 11 refs., In German with English summary.
Avalanche formation, Snow cover, Fracturing, Shear stress, Rheology, Analysis (mathematics).

42-2980
Numerical analysis of a hanging glacier, Liskamm (Wallis Alps). [Numerische Analyse eines Hängegletschers am Liskamm (Walliser Alpen)],
Schweizer, J., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.371-386, 14 refs., In German with English summary.
Glacier flow, Avalanche formation, Icefalls, Stresses, Velocity, Viscous flow, Glacier beds, Analysis (mathematics), Mountain glaciers.

42-2981
Pressures at the bed of the Findelen Glacier: preliminary results. [Pressions à la base du glacier de Findelen: résultats préliminaires],
Zryd, A., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen,* 1988, No.94, Schnee, Eis und Wasser alpiner Gletscher; Tagung am 26. Januar 1988 in Zürich (Snow, ice and water in mountain glaciers; meeting held in Zurich, Jan. 26, 1988), p.387-403, In French with English summary. 10 refs.
Ice pressure, Glacier ice, Glacier flow, Ice solid interface, Glacier beds, Shear stress, Ice temperature, Ice friction, Surface roughness, Glacial deposits, Glacier tongues.

42-2982
Arctic coastal processes and slope protection design.
Chen, A.T., ed, New York, American Society of Civil Engineers, 1988, 247p., Refs. passim. For individual papers see 42-2983 through 42-2993.
Leidersdorf, C.B., ed.
Coastal topographic features, Ice erosion, Shoreline modification, Shore erosion, Engineering, Slope protection, Slope processes, Polar regions, Design, Beaches, Wind factors, Ocean waves.

42-2983
Coastal geomorphology of Arctic Alaska.
Barnes, P.W., et al, Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.3-30.
Rawlinson, S.E., Reimnitz, E.
Coastal topographic features, Geomorphology, Tundra, Ice erosion, Permafrost, Shoreline modification, Deltas, Beaches, Sea ice, Ocean waves, United States —Alaska.

42-2984
Beaufort Sea winds, waves, storm surge and circulation.
Gordon, R.B., et al, Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.31-45, 36 refs.
Heideman, J.C.
Sea ice distribution, Ocean waves, Ocean currents, Wind factors, Coastal topographic features, Moorings, Seasonal variations, Storms, Beaufort Sea.

42-2985
Thermal and mechanical erosion of slopes and beaches.
Kobayashi, N., et al, Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.46-62, Refs. p.60-62.
Reimnitz, E.
Slope processes, Shore erosion, Offshore structures, Thermal effects, Forecasting, Sediment transport, Beaches, Ice action, Water waves, Heat transfer.

42-2986
Coastal ice dynamics.
Sackinger, W.M., Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.63-84, Refs. p.80-84.
Ice mechanics, Sea ice, Fast ice, Shoreline modification, Wind factors, Shear stress, Ice edge, Seasonal variations, Forecasting.

42-2987
Ice gouge processes in the Alaskan Beaufort Sea.
Rearic, D.M., et al, Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.85-107, 53 refs.
Ticken, E.J.
Ice scoring, Ocean bottom, Bottom topography, Offshore structures, Countermeasures, Protection, Beaufort Sea.

42-2988
Onshore ice pile-up and ride-up: observations and theoretical assessment.
Kovacs, A., et al, MP 2336, Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.108-142, Refs. p.138-142.
Sodhi, D.S.
Fast ice, Ice pileup, Ice override, Ice loads, Ocean currents, Wind factors, Seasonal variations, Ice sheets, Pressure ridges.
An overview of shore ice pile-up and ride-up observations is presented and the forces associated with ice rubble formation are discussed. Historical and recent observations indicate that the onshore movement of ice is generally a spring or fall event associated with wind and/or water driving forces. The occurrence of this phenomenon is relatively unpredictable and has resulted in the destruction of structures and loss of life. The analytical and experimental work undertaken to date tends to show that low driving forces per unit width can cause shore ice pile-up or ride-up, but that high concentrated forces can occur during such events along local areas of resistance. An analysis of the ice sheet failure process is given which indicates that the average ice rubble building force per unit width is a function of rubble height, to a power between 1 and 2, depending on the total ice sheet width undergoing failure.

42-2989
Sand bag slope protection: design, construction, and performance.
Gadd, P.E., Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.145-165, 10 refs.
Slope protection, Construction materials, Offshore structures, Ice loads, Ocean waves, Design, Sands, Engineering, Freeze thaw cycles, Beaufort Sea.

42-2990
Concrete mat slope protection for arctic applications.
Leidersdorf, C.B., Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.166-189, 17 refs.
Slope protection, Precast concretes, Offshore structures, Ice loads, Design, Hydraulics, Ice rideup, Concrete strength, Beaufort Sea.

42-2991
Riprap and Armor stone.
McDonald, G.N., Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.190-207, 52 refs.
Offshore structures, Shores, Ice loads, Ocean waves, Ocean currents, Construction materials, Rocks, Design, Countermeasures, Protection.

42-2992
Large precast concrete armor units in the Arctic.
Collins, J.I., Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.208-215, 5 refs.
Precast concretes, Offshore structures, Ice loads, Ocean waves, Ice cover effect, Design, Protection.

42-2993
Arctic slope protection: considerations for ice.
Croasdale, K.R., et al, Arctic coastal processes and slope protection design. Edited by A.T. Chen and C.B. Leidersdorf, New York, American Society of Civil Engineers, 1988, p.216-243, 29 refs.
Allyn, N., Roggensack, W.
Slope protection, Ice loads, Ice cover effect, Offshore structures, Beaches, Design, Ice rideup, Ocean waves, Ice scoring, Ice conditions.

42-2994
Study on hydrological characteristics of river basins in Japan based on monthly water balance.
Uehara, S., *Japan. National Research Center for Disaster Prevention. Report,* Nov. 1987, No.40, p.21-309, In Japanese with English summary. 27 refs.
River basins, Water balance, Snowmelt, Hydrology, Evapotranspiration, Ground water, Precipitation (meteorology), Models.

42-2995
Calculation of size-effect of blowing snow particles on the snow particle counter (First report).
Sato, A., *Japan. National Research Center for Disaster Prevention. Report,* Nov. 1987, No.40, p.339-342, In Japanese with English summary. 3 refs.
Blowing snow, Snowflakes, Grain size, Particle size distribution, Measuring instruments, Accuracy.

42-2996
Mobile industrial bases for construction in undeveloped regions of the Soviet Union. [Mobil'nye proizvodstvennye bazy dlia stroitel'stva v neosvoennykh raĭonakh strany],
Berdnikov, IU., *Na stroĭkakh Rossii,* July 1987, No.7, p.40-43, In Russian.
Modular construction, Construction materials, Construction equipment, Permafrost beneath structures, Storage, Design, Industrial buildings, Residential buildings.

42-2997
Pre-wetting cuts counties' winter maintenance bill.
Cowling, J., *Highways,* Sep. 1987, 55(1929), p.25-26.
Winter maintenance, Salting, Cost analysis.

42-2998
Arctic cloudiness in spring from satellite imagery.
Barry, R.G., et al, *Journal of climatology*, Sep.-Oct. 1987, 7(5), p.423-451, 37 refs.
Crane, R.G., Schweiger, A., Newell, J.
Cloud cover, Remote sensing, Meteorological data.

42-2999
Role of radiation geometry in the climate response of Mount Kenya's glaciers, part I: horizontal reference surfaces.
Kruss, P.D., et al, *Journal of climatology*, Sep.-Oct. 1987, 7(5), p.493-505, 10 refs.
Hastenrath, S.
Solar radiation, Climatic changes, Glacier heat balance, Glacier mass balance, Glacier oscillation.

42-3000
Estimating Cn square over snow and sea ice from meteorological data.
Andreas, E.L., *Optical Society of America. Journal*, Apr. 1988, 5A(4), MP 2393, p.481-495, 69 refs.
Refraction, Atmospheric physics, Snow cover effect, Ice cover effect.

42-3001
Periglacial geomorphology in North America: current research and future trends.
French, H.M., *Progress in physical geography*, Dec. 1987, 11(4), p.533-551, Refs. p.546-551.
Geomorphology, Periglacial processes, Frost weathering, Frost heave, Ground ice, Permafrost, Patterned ground.

42-3002
Cryolithozone in the coastal part of the western Yamal Peninsula. [Kriolitozona pribrezhnoĭ chasti Zapadnogo IAmala],
Grigor'ev, N.F., Yakutsk, 1987, 111p., In Russian with English table of contents enclosed. Refs. p.106-109.
Subsea permafrost, Shore erosion, Shoreline modification, Coastal topographic features, Permafrost distribution, Land ice, Ground ice, Permafrost structure, Active layer, Shores, Arctic Ocean.

42-3003
Orbital forcing and the Vostok ice core.
Saltzman, B., et al, *Nature*, May 12, 1988, 333(6169), p.123-124, 13 refs. For the paper being commented on see 42-562 (F-36408).
Massch, K.A.
Ice cores, Climatic changes, Atmospheric composition, Carbon dioxide, Antarctica—Vostok Station.
The authors disagree with the statement in a recent paper that a non-linear response of ice sheets to orbital forcing is generally assumed to cause the 100-kyr oscillation which has dominated the climate record over the last million years. They then proceed to discuss other recent papers which tend to show that there is general agreement for orbital forcing as the primary factor in the 20-40kyr variations but not in the 100-kyr oscillation. Atmospheric CO2 is believed to be the critical variable in forming the basis for a natural nonlinear oscillator.

42-3004
Protection of propellers in ice—Phase 2.
Glen, I., et al, *Transport Canada. Report*, May 1986, TP 7887E, 31p. + 2 appends., 10 refs.
Icebreakers, Ship icing, Ice conditions, Propellers, Ice prevention, Protection, Models.

42-3005
Catastrophic lake drainage, Tuktoyaktuk Peninsula area, District of Mackenzie.
Mackay, J.R., *Canada. Geological Survey. Paper*, 1988, No.88-D1, p.83-90, 11 refs., With French summary.
Lake water, Drainage, Continuous permafrost, Remote sensing, Soil erosion, Ice wedges, Thermokarst, Ice tunnels, LANDSAT, Canada—Northwest Territories—Tuktoyaktuk Peninsula.

42-3006
Effect of forest fires on permafrost terrain stability, Little Chicago-Travaillant Lake area, Mackenzie Valley, N.W.T.
Harry, D.G., et al, *Canada. Geological Survey. Paper*, 1988, No.88-D1, p.91-94, 10 refs., With French summary.
MacInnes, K.L.
Permafrost, Forest fires, Frozen ground strength, Slope stability, Active layer, Pipelines, Glacial deposits, Lacustrine deposits.

42-3007
Reconnaissance study of the marine geology of the Lougheed-King Christian—Cameron islands region, northwest Arctic Island channels.
Sonnichsen, G.V., et al, *Canada. Geological Survey. Paper*, 1988, No.88-D1, p.115-120, 13 refs., With French summary.
MacLean, B.
Marine geology, Channels (waterways), Ice conditions, Streams, Sediments, Stratigraphy, Glacial deposits, Bottom sediment, Acoustics, Marine deposits, Canada—Northwest Territories—Arctic Islands.

42-3008
Ground probing radar investigations of gravel roadbed failures, Rae Access road, N.W.T.
LaFlèche, P.T., et al, *Canada. Geological Survey. Paper*, 1988, No.88-D1, p.129-135, 21 refs., With French summary.
Embankments, Ground ice, Radar echoes, Ice melting, Damage, Roadbeds, Detection, Cracking (fracturing), Gravel.

42-3009
Reconstruction of marine transgression history from an offshore ground temperature profile, Esso Angasak L-03 wellsite, Beaufort Sea.
Taylor, A., et al, *Canada. Geological Survey. Paper*, 1988, No.88-D1, p.137-142, 15 refs., With French summary.
Judge, A.
Shoreline modification, Subsea permafrost, Sea water, Water temperature, Landscape development, Models, Geothermy, Beaufort Sea.

42-3010
Ice conditions along the Ohio River as observed on Landsat images, 1972-1985.
Gatto, L.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, Jan. 1988, SR 88-01, 162p., ADA-191 172, 25 refs.
Ice conditions, River ice, Remote sensing, Ice navigation, Aerial surveys, LANDSAT, Photointerpretation, Seasonal variations, United States—Ohio River.
Landsat images were used to map ice distributions along the Ohio River. Ice conditions were inferred based on image grey tones interpreted using conventional photointerpretation techniques. Portions of the river that appeared black were considered ice-free. Grey tones were interpreted as ice that varied from patches of thin, snow-free solid or fragmented ice, sometimes with open areas, to floes, pans and slush. A white tone represented thick ice or snow-covered ice with few interspersed open areas. Ice that produced grey tones on the images occurred most frequently. Ice typically forms in late Dec. or early Jan. on the Ohio River and is gone by mid to late Feb. Ice was observed on the upstream section of the river from Pittsburgh to Greenup Dam during 7 of the 13 winters from 1972 to 1985, on the middle section from Greenup Dam to Cannelton Dam during 3 winters, and on the downstream section from Cannelton Dam to the Mississippi River during 4 winters. The most severe and long-lasting ice conditions occurred during the 1976-77 winter when ice covered 65% of the upstream section, 56% of the middle section, and 78% of the downstream section.

42-3011
Physical limnology of an ice-covered lake with through-flow: Lake Laberge, Yukon Territory.
Carmack, E.C., et al, *National Hydrology Research Institute, (Canada). Paper*, 1988, No.35, Inland Waters/Lands Directorate, IWD scientific series, No.157, 56p., With French summary. Refs. p.18-20.
Limnology, Ice cover effect, Icebound lakes, Heat transfer, Freeze thaw cycles, Thermodynamics, River flow, Seasonal variations.

42-3012
Atmospheric and aqueous flux of sulfur in snow.
Stanley, D.A., Tucson, University of Arizona, 1987, 120p., University Microfilms order No.MA1330540, M.S. thesis. For abstract see Masters abstracts international, Winter 1987, p.354.
Snow impurities, Permeability, Snow density, Snow water content.

42-3013
Modeling the natural convection in pure water near the density extremum.
Fukumori, E., Buffalo, State University of New York, 1987, 180p., University Microfilms order No.-DA8727700, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Apr. 1988, p.3051.
Mathematical models, Convection, Ice cover effect, Water flow.

42-3014
Development and freeze-thaw durability of high fly ash content concrete.
Sajadi, J., Morgantown, West Virginia University, 1987, 99p., University Microfilms order No.-DA8729233, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Apr. 1988, p.3058.
Concretes, Frost resistance, Freeze thaw tests, Concrete admixtures.

42-3015
Experimental study of the coherent under-ice reflectivity of sound in the Greenland Sea Marginal Ice Zone.
Gruber, P.L., Miami, University of Miami, 1987, 162p., University Microfilms order No.DA8729364, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Apr. 1988, p.2999.
Underwater acoustics, Ice bottom surface, Sound waves.

42-3016
Numerical model of the dynamics of large ice sheets.
Hall, J.C., Amherst, University of Massachusetts, 1987, 497p., University Microfilms order No.-DA8727055, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Mar. 1988, p.2583.
Ice sheets, Mathematical models, Ice mechanics, Glacier flow.

42-3017
Time-dependent response of floating ice to a steadily moving load.
Schulkes, R.M.S.M., et al, *Journal of fluid mechanics*, Jan. 1988, Vol.186, p.25-46, 17 refs.
Sneyd, A.D.
Floating ice, Ice roads, Aircraft landing areas, Flexural strength.

42-3018
Mathematical and physical modelling of double-diffusive convection of aqueous solutions crystallizing at a vertical wall.
Thompson, M.E., et al, *Journal of fluid mechanics*, Feb. 1988, Vol.187, p.409-433, 35 refs.
Szekely, J.
Solutions, Diffusion, Ice formation, Convection, Crystal growth.

42-3019
Vehicles and aircraft on floating ice.
Squire, V.A., et al, *Nature*, May 12, 1988, 333(6169), p.159-161, 16 refs.
Robinson, W.H., Langhorne, P.J., Haskell, T.G.
Floating ice, Ice runways, Ice roads, Sea ice, Strain tests.
Ice roads and ice runways are a common feature of Arctic and Antarctic transportation. Although theoretical work to calculate the deflection profile due to a moving load is well established, there has been little progress experimentally and early studies were subject to error because of the type of transducer used. Recently there has been a renewed interest in the problem which has led to several theoretical papers and to the collection of a small quantity of high-quality data. Reported here are some preliminary results from a new and complete set of experiments done on antarctic sea ice using strain gauges to measure directly the strain induced by the vehicle. The results show excellent agreement with theory in all respects. (Auth.)

42-3020
Underside of Arctic sea ice imaged by sidescan sonar.
Wadhams, P., *Nature*, May 12, 1988, 333(6169), p.161-164, 12 refs.
Sea ice, Ice bottom surface, Acoustic measurement.

42-3021
Problems of hydrological forecasting. [Voprosy gidrologicheskikh prognozov],
Rakhmanov, V.V., ed, *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1988, Vol.295, 184p., In Russian. For selected papers see 42-3022 through 42-3026. Refs. passim.
Ginzburg, B.M., ed.
Icebound rivers, Icebound lakes, Ice accretion, Ice cover thickness, Meteorological factors, Ice navigation, Channels (waterways), Ice forecasting.

42-3022
Methods of long-range forecasting ice breakup dates for the Dnepr and Don rivers. [Metodika dolgosrochnogo prognoza srokov vskrytiia rek Dnepra i Dona],
Savchenkova, E.I., *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1988, Vol.295, p.113-121, In Russian. 6 refs.
River ice, Ice cover thickness, Icebound rivers, Ice breaking, Forecasting, Meteorological factors, Synoptic meteorology.

42-3023
Methods of long-range forecasting of dates of ice breakup on rivers in the northern European USSR. [Metodika dolgosrochnogo prognoza srokov vskrytiia rek severa evropeĭskoĭ chasti SSSR],
Efremova, N.D., *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.295, p.122-129, In Russian. 9 refs.
River ice, Icebound rivers, Ice cover thickness, Ice breaking, Meteorological factors.

42-3024
Ice accretion on the Volga water reservoirs and its dependence on atmospheric processes. [Narastanie l'da na volzhskikh vodokhranilishchakh i ego zavisimost' ot atmosfernykh protsessov],
Podsechina, T.V., *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.295, p.130-137, In Russian. 14 refs.
Lake ice, Icebound lakes, Ice accretion, Ice cover thickness, Meteorological factors, Ice forecasting, Ice navigation, Icebreakers.

42-3025
Calculating the freezing of channels cut in ice cover of water reservoirs. [O raschete smerzaniia l'da v kanalakh prolozhennykh v ledianom pokrove vodokhranilishch],
Ponomarev, M.B., *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.295, p.138-148, In Russian. 15 refs.
Lake ice, Channels (waterways), Icebound lakes, Ice navigation, Ice cover thickness, Ice floes.

42-3026
Calculating the dates of river freezeup and breakup in northern Siberia. [O raschete srokov zamerzaniia i vskrytiia rek severa Sibiri],
Ginzburg, B.M., *Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.295, p.149-173, In Russian. 7 refs.
Ice forecasting, Ice formation, Icebound rivers, Ice breaking, River basins, Paludification, Permafrost beneath rivers, Landscape types, Permafrost distribution, Maps.

42-3027
Forecasting ice conditions in non-arctic seas of the USSR. [O prognoze ledovitosti nearkticheskikh morei SSSR],
Karakash, A.I., et al, *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.292, p.118-123, In Russian. 1 ref. Korob, M.I.
Sea ice distribution, Ice conditions, Ice forecasting, Computer applications.

42-3028
Statistical analysis of ice appearance dates on the Far Eastern seas. [Statisticheskiĭ analiz srokov pervogo poiavleniia l'da na moriakh Dal'nego Vostoka],
Sheremetevskaia, O.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.292, p.124-129, In Russian. 2 refs.
Sea ice, Hydrothermal processes, Meteorological data, Ice formation, Analysis (mathematics).

42-3029
Seasonal forecasts of ice hummocking in the north Caspian Sea. [Sezonnyĭ prognoz torosistosti l'dov Severnogo Kaspiia],
Bukharitsin, P.I., *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy,* 1988, Vol.292, p.130-135, In Russian. 6 refs.
Sea ice distribution, Ice cover thickness, Pressure ridges, Ice surveys, Aerial surveys, Ice forecasting.

42-3030
Preparing for climate change.
North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987, Rockville, MD, Government Institutes, Inc., Apr. 1988, 516p., Refs. passim. For selected papers see 42-3031 through 42-3036.
Climatic changes, Carbon dioxide, Ice cover effect, Sea level, Water reserves, Paleoclimatology, Pleistocene, Atmospheric composition.

42-3031
Warming of permafrost in the Alaskan Arctic.
Lachenbruch, A.H., North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987. Proceedings, Rockville, MD, Government Institutes, Inc., Apr. 1988, p.102-107, For another version see 41-1254.
Permafrost thermal properties, Climatic changes, Frozen ground temperature, Surface temperature, Permafrost heat transfer, Geothermy, Temperature variations, United States—Alaska.

42-3032
Variations in atmospheric carbon dioxide and ice age climate.
MacDonald, G.J., North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987. Proceedings, Rockville, MD, Government Institutes, Inc., Apr. 1988, p.108-117, 11 refs.
Climatic changes, Carbon dioxide, Pleistocene, Paleoclimatology, Atmospheric composition, Ice cores, Drill core analysis, Air entrainment, Snowfall, Glaciation.

42-3033
Sea ice as a potential early indicator of climate change.
Parkinson, C.L., North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987. Proceedings, Rockville, MD, Government Institutes, Inc., Apr. 1988, p.118-124, 12 refs.
Sea ice distribution, Climatic changes, Remote sensing, Atmospheric composition, Heat transfer, Solar radiation, Seasonal variations, Oceans.
After reviewing the areal extent of sea ice distribution over the course of a year and its high concentration in the Antarctic, the importance of such extensive sea ice cover to the global climate system, and the likelihood that changes in the sea ice cover could prove to be early indicators of climate change, are discussed. The following 3 criteria for a potential early indicator of climate change are listed: the variable should exhibit a large climate signal; it should be readily measurable through routine observations; and it should have low enough natural variability to allow a climate signal to be detected.

42-3034
Causes and effects of sea level rise.
Titus, J.G., North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987. Proceedings, Rockville, MD, Government Institutes, Inc., Apr. 1988, p.125-139, Refs. p.136-139.
Ice melting, Sea ice, Sea level, Climatic changes, Shoreline modification, Swamps, Shore erosion, Flooding.
An overview of the causes and effects of the projected rise in sea level from the greenhouse effect is presented. In listing the causes, a brief description of the antarctic ice sheet—with its vulnerability to climatic changes—as a source for the higher sea level is given.

42-3035
Adaptability to climate change: the case of the marine economy of Atlantic Canada.
Stokoe, P.K., North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987. Proceedings, Rockville, MD, Government Institutes, Inc., Apr. 1988, p.274-283, 3 refs.
Climatic changes, Sea ice distribution, Marine transportation, Marine biology, Offshore structures, Ice loads, Impact strength, Sea level, Atlantic Ocean.

42-3036
Climatic changes—impacts on Great Lakes levels and navigation.
Raoul, J., et al, North American Conference on Preparing for Climate Change, 1st: a Cooperative Approach, Washington, D.C., Oct. 27-29, 1987. Proceedings, Rockville, MD, Government Institutes, Inc., Apr. 1988, p.488-501, 19 refs.
Goodwin, Z.M.
Climatic changes, Navigation, Lake ice, Water level, Environmental impact, Lake water, Ice conditions, Meteorological factors, Great Lakes.

42-3037
Working group on ice forces. 3rd state-of-the-art report.
Sanderson, T.J.O., ed, *U.S. Army Cold Regions Research and Engineering Laboratory,* Sep. 1987, SR 87-17, 221p., ADA-191 067, Refs. passim. For individual papers (mostly from different source) see 40-4602 through 40-4608 and 42-3038.
Ice loads, Offshore structures, Hydraulic structures, Sea ice, Ice scoring, Structures, Design, Engineering, Tests.
This working group report on ice forces includes individual papers which discuss laboratory results, field measurements, instrumentation, numerical analysis, and iceberg scour. A more detailed abstract appears at the beginning of each individual paper.

42-3038
Iceberg impact forces.
Nevel, D.E., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report,* Sep. 1987, SR 87-17, Working group on ice forces. 3rd state-of-the-art report. Edited by T.J.O. Sanderson, p.197-221, ADA-191 067, 47 refs.
Ice loads, Icebergs, Offshore structures, Impact strength, Design criteria, Statistical analysis, Analysis (mathematics).

42-3039
Modeling the thawing dynamics of permafrost around excavations. [Modelirovanie dinamiki protaivaniia mnogoletnemerzlykh gornykh porod vokrug vyrabotok],
Izakson, V.IU., et al, *Promyshlennaia teplotekhnika,* 1987, 9(3), p.36-39, In Russian. 5 refs.
Petrov, E.E., Samokhin, A.V.
Permafrost thermal properties, Drilling, Wells, Heat transfer, Models.

42-3040
Using the straight lines method in numerical solution of Stefan problems. [Chislennoe reshenie zadachi Stefana metodom priamykh],
Fomin, A.V., *Promyshlennaia teplotekhnika,* 1986, 8(5), p.10-13, In Russian. 14 refs.
Gas wells, Permafrost thermal properties, Stefan problem, Permafrost control, Artificial freezing.

42-3041
Improved technology of frozen ground excavation by blasting. [Usovershenstvovannaia tekhnologiia vzryvnogo rykhleniia merzlykh gruntov],
IUrko, A.A., *Promyshlennoe stroitel'stvo i inzhenernye sooruzheniia,* July-Sep. 1987, No.3, p.26, In Russian.
Blasting, Excavation, Boreholes, Earthwork, Frozen ground.

42-3042
Using heating wires in winter concreting. [Ispol'zovanie nagrevatel'nykh provodov dlia progreva betona v zimnee vremia],
Eremenko, I.V., et al, *Promyshlennoe stroitel'stvo i inzhenernye sooruzheniia,* Oct.-Dec. 1987, No.4, p.14-15, In Russian.
Kharlamova, R.V.
Winter concreting, Concrete heating, Electric heating, Temperature control.

42-3043
Studying failures of the equipment supplying power to drilling rigs under West Siberian conditions. [Issledovanie otkazov oborudovaniia sistemy elektrosnabzheniia burovykh ustanovok v usloviiakh Zapadnoĭ Sibiri],
Bashirov, I.A., *Promyshlennaia energetika,* Aug. 1986, No.8, p.13-14, In Russian. 2 refs.
Wind factors, Permafrost thermal properties, Drilling, Electric power, Transmission lines, Icing, Frost action.

42-3044
Causes of humidification of technological oxygen and the prevention of icing of low- and medium-pressure pipelines. [Prichiny uvlazhneniia tekhnologicheskogo kisloroda i meropriiatiia po bor'be s obmerzaniem truboprovodov nizkogo i srednego davleniia],
Kolbasov, M.G., et al, *Promyshlennaia energetika,* Feb. 1986, No.2, p.36-39, In Russian. 2 refs.
Sereda, L.G.
Liquefied gases, Pipeline freezing, Icing, Oxygen, Pipelines.

42-3045
Technology of stabilizing loose saturated rocks with synthetic resins. [Tekhnologiia uprochneniia rykhlykh obvodnennykh porod sinteticheskimi smolami],
Kondratov, A.B., et al, *Razvedka i okhrana nedr,* June 1987, No.6, p.26-32, In Russian. 4 refs.
Leshchikov, V.I., Tkachenko, IU.E., Egorov, V.P.
Cements, Earthwork, Resins, Soil stabilization, Drilling, Mining, Excavation.

42-3046
Experience in introducing power-saving regimes of electric heating for cast-in-place concrete structures. [Opyt vnedreniia maloenergoemkikh rezhimov elektroprogreva betona monolitnykh konstruktsiĭ],
Gendin, V.IA., et al, *Promyshlennoe stroitel'stvo,* Sep. 1986, No.9, p.20-21, In Russian. 2 refs.
Kuz'min, V.K., Pleshakov, I.G.
Winter concreting, Electric heating, Concrete heating, Concrete placing, Concrete freezing.

42-3047
Using thermosetting flexible covers in heating cast-in-place concrete. [Elektroobogrev betona v monolitnykh konstruktsiiakh s pomoshch'iu termoaktivnykh gibkikh pokrytii],
Maksimov, S.V., et al, *Promyshlennoe stroitel'stvo,* Sep. 1986, No.9, p.21-22, In Russian.
Shupikov, S.A., Dolbichkin, A.V., Golovatyi, N.A.
Concrete heating, Winter concreting, Electric heating, Concrete freezing, Concrete hardening.

42-3048
Experience in using heating wires in winter concreting. [Opyt primeneniia nagrevatel'nykh provodov v tekhnologii zimnego betonirovaniia],
Shishkin, V.V., et al, *Promyshlennoe stroitel'stvo,* Sep. 1986, No.9, p.22-23, In Russian. 5 refs.
Miagkov, A.D., Gubman, B.IU., Kliauzov, V.V.
Concrete heating, Winter concreting, Formwork (construction), Electric heating, Concrete admixtures, Frost resistance, Concrete freezing.

42-3049
Electrothermal treatment of concrete using the reinforcement as heating elements. [Elektrotermoobrabotka betona s ispol'zovaniem armatury v kachestve nagrevatelia],
Miagkii, V.M., et al, *Promyshlennoe stroitel'stvo,* Sep. 1986, No.9, p.24-25, In Russian. 4 refs.
Gendin, V.IA., Arkhangel'skii, A.N., Zabolot'ko, G.F.
Winter concreting, Reinforced concretes, Concrete heating, Electric heating.

42-3050
Peripheral electric heating and warming-up of cast-in-place concrete in reusable formworks. [Periferiinyi elektroprogrev i obogrev monolitnogo betona v inventarnoi shchitovoi opalubke],
Mironov, S.A., et al, *Promyshlennoe stroitel'stvo,* Sep. 1986, No.9, p.26-27, In Russian.
Vit'ko, S.D.
Concrete heating, Winter concreting, Electric heating, Formwork (construction), Concrete freezing.

42-3051
Optical disk based acquisition system (ODAS) description and report following the first deployment during the Prudhoe Bay Experiment spring 1987 (PRUDEX).
Von der Heydt, K., *Woods Hole Oceanographic Institution. Report,* Nov. 1987, WHOI-87-49, 26p. ADA-188 391.
Data processing, Optical properties, Ice conditions, Polar regions, Detection, Storage, Computer applications, United States—Alaska—Prudhoe Bay.

42-3052
Molecular dynamics study of the effect of pressure on the properties of water and ice.
Tse, J.S., et al, *Journal of physical chemistry,* Jan. 28, 1988, 92(2), p.315-318, 35 refs.
Klein, M.L.
Ice physics, Molecular structure, Pressure, Ice crystal structure, Loads (forces), Water, Ice density, Models.

42-3053
Internal structure of glacial landforms: an example from the Halton till plain, Scarborough Bluffs, Ontario.
Sharpe, D.R., *Boreas,* 1988, 17(1), p.15-26, 32 refs.
Glacial deposits, Periglacial processes, Landforms, Sediments, Grounded ice, Subglacial caves.

42-3054
Holocene solifluction in a snow-patch environment at the forest-tundra transition along the eastern Hudson Bay coast, Canada.
Morin, H., et al, *Boreas,* 1988, 17(1), p.79-88, Refs. p.86-88.
Payette, S.
Forest tundra, Periglacial processes, Snow cover distribution, Paleoclimatology, Radioactive age determination, Ground water, Carbon isotopes, Canada—Northwest Territories—Hudson Bay.

42-3055
Seasonal variation of downward flux of particulate organic matter under the antarctic fast ice.
Matsuda, O., et al, NIPR Symposium on Polar Biology, Proceedings. No.1, Tokyo, National Institute of Polar Research, 1987, p.23-34, 13 refs.
Ishikawa, S., Kawaguchi, K.
Ice cover effect, Algae, Antarctica—Lützow-Holm Bay.
Marked seasonal variation of particulate organic carbon (POC) flux was observed in Lützow-Holm Bay, with larger fluxes in summer (136 mgC/sq m/d) and smaller fluxes in winter (1.5 mgC/sq m/d). Particulate organic nitrogen (PON) and particulate phosphorus (PP) flux showed similar trends to POC variation; C:N:P ratio also varied seasonally. Chlorophyll *a* flux varied more drastically than POC, suggesting the direct input of ice algae and/or phytoplankton to the benthic community in summer. (Auth. mod.)

42-3056
Balance of avalanches, 1986-1987 season. [Bilan des avalanches saison 1986-87], *Neige et avalanches,* Dec. 1987, No.44, p.7-18, In French.
Avalanche formation, Avalanche deposits, Mass balance, Seasonal variations, France—Alps.

42-3057
Avalanches of Combe du Pra. Analysis of snow conditions. [L'avalanche de la Combe du Pra; analyse des conditions nivologiques],
Lafeuille, J., *Neige et avalanches,* Dec. 1987, No.44, p.19-26, In French.
Avalanche formation, Snow mechanics, Snow accumulation, Snowfall, Precipitation (meteorology), Avalanche deposits.

42-3058
Data processing aid to local forecasting of avalanche risk. [Aide informatisée à la prévision locale du risque d'avalanche],
Giraud, G., *Neige et avalanches,* Dec. 1987, No.44, p.27-36, In French.
Avalanche forecasting, Avalanche formation, Snow accumulation, Statistical analysis, Models.

42-3059
Recommendations applicable to cables transporting explosives (CA.T.EX) designed to release avalanches. [Recommandations applicables aux cables transporteurs d'explosifs (CATEX) destinés au déclenchement des avalanches],
Brugnot, G., et al, *Neige et avalanches,* Dec. 1987, No.44, p.37-49, In French.
Rapin, F.
Explosives, Transportation, Avalanche triggering, Equipment, Avalanche formation.

42-3060
State of California chooses CA.T.EX. [L'état de Californie choisit le CA.T.EX],
Borrel, G., *Neige et avalanches,* Dec. 1987, No.44, p.50-52, In French.
Explosives, Avalanche triggering, Avalanche formation, United States—California.

42-3061
Analysis of the protective role of mountain forest canopy. [Analyse du rôle de protection des forêts domaniales en montagne],
Sonnier, J., *Neige et avalanches,* Dec. 1987, No.44, p.53-56, In French.
Avalanche formation, Forest canopy, Protection, Damage, Countermeasures, Mountains.

42-3062
Training courses 1987-1988 season. [Stages de formation saison 1987-1988], *Neige et avalanches,* Dec. 1987, No.44, p.63-64, In French.
Avalanches, Education, Safety, Mountains.

42-3063
Glacier fluctuations and hazards.
Grove, J.M., *Geographical journal,* Nov. 1987, 153(3), p.351-369, Refs. p.366-367.
Glacier oscillation, Ice sheets, Heat transfer, Paleoclimatology, Sea level.
Physical readjustments involved in glacier fluctuations present high risk situations at certain times and places. An outline of the history of glacier fluctuations in Holocene times and particularly the Little Ice Age provides the context for a discussion of the types of hazards associated with climatically led oscillations in populated areas and their timing. Any future change in climate towards the conditions obtaining in the Little Ice Age would now involve greater risk from hazard than existed in former centuries. A more probable change in climate is rising temperature caused by more carbon dioxide in the atmosphere resulting in rising sea levels and perhaps surging of the antarctic ice sheet. (Auth. mod.)

42-3064
Glaciological and chemical characteristics of snow in the inland plateau, east Queen Maud Land, Antarctica.
Kamiyama, K., et al, *Antarctic record,* Nov. 1987, 31(3), p.163-170, 10 refs.
Snow composition, Snow hardness, Snow mechanics, Antarctica—Queen Maud Land.
Glaciological observations on the high plateau in the eastern Queen Maud Land were carried out along the routes of oversnow traverses by the 25th and 26th JARE in 1984 and 1985. Surface topography of the dome-like plateau and the positions of ice divides were determined clearly. The dome is at 77.4S, 39.6E at an altitude of 3,807 m a.s.l. Snow drift samples were collected along the route from Mizuho Station to the dome and were melted carefully in a snow vehicle. The value of electric conductivity of the melted snow samples at 0 C was obtained before storing in the pre-cleaned bottles. In a home laboratory, pH measurements of the samples were carried out. High electric conductivity and low pH values were found among the snow samples collected in the dome area, especially around the region higher than 3600 m a.s.l. The region has different glaciological characteristics from those in the katabatic wind region: the lower degree of surface inclinations, the lower the net accumulation, the smoother the surface morphology, the lower ram hardness of the surface snow layer and the higher lapse rate of snow temperature at 10 m depth. Taking into consideration the comparatively higher concentration of artificial radio nuclides reported in other antarctic inland areas, the glacio-chemical environments in the antarctic inland region are thought to be characterized by the transport of stratospheric aerosols or gases. (Auth.)

42-3065
Influence of cloud droplets on the measurement of ice particle concentrations with a particle measuring system's 2DC optical array probe.
Rauber, R.M., et al, *Journal of atmospheric and oceanic technology,* Feb. 1988, 5(1), p.123-128, 16 refs.
Heggli, M.F.
Cloud droplets, Ice crystals, Measuring instruments.

42-3066
Ice crystal replication with common plastic solutions.
Takahashi, T., et al, *Journal of atmospheric and oceanic technology,* Feb. 1988, 5(1), p.129-135, 13 refs.
Fukuta, N.
Ice crystal replicas, Plastics, Solutions.

42-3067
Development and testing of a fibre optic data system for marine transportation. [Système de transmission de données sur fibres optiques pour utilisations marines],
Smith, G.A.J., et al, *Transport Canada. Report,* Apr. 1987, TP 8526F, 16p., In French with English summary.
Snow, J.W., Mayich, J.S.
Icebreakers, Marine transportation, Optical properties, Measuring instruments, Tests, Design.

42-3068
Simulated fluctuations in annual Labrador sea-ice cover.
Ikeda, M., et al, *Atmosphere-ocean,* Mar. 1988, 26(1), p.16-39, With French summary. 21 refs.
Symonds, G., Yao, T.
Sea ice distribution, Ice edge, Ice models, Ice conditions, Seasonal variations, Labrador Sea.

42-3069
Ice-water slurry flow in a circular pipe.
Knodel, B.D., et al, *International communications in heat and mass transfer,* Mar.-Apr. 1988, 15(2), p.239-245, 14 refs.
France, D.M.
Slush, Ice water interface, Pipes (tubes), Flow rate, Pressure, Hydrodynamics, Tests.

42-3070
***Radiogliaciology* by V.V. Bogorodskii, et al.**
Jezek, K.C., *American Meteorological Society. Bulletin,* Jan. 1988, 69(1), MP 2338, p.55-56, Book review. For the book being reviewed see 40-1650.
Glacier ice, Airborne radar, Radar echoes, Glaciology, Photointerpretation, Geophysical surveys, Ice physics.

42-3071
Avalanche accidents in Canada. 3. A selection of case histories 1978-1984.
Schaerer, P.A., *Institute for Research in Construction, Ottawa. IRC paper,* 1987, No.1468, 138p., With French summary. 4 refs.
Avalanche formation, Avalanche deposits, Accidents, Rescue operations, Snow depth, Statistical analysis, Temperature effects, Climatic factors.

42-3072
Spring meltwater mixing in small arctic lakes.
Bergmann, M.A., et al, *Canadian journal of fisheries and aquatic sciences,* Nov. 1985, 42(11), p.1789-1798, With French summary. 21 refs.
Welch, H.E.
Meltwater, Lake ice, Lake water, Ice melting, Ice-bound lakes, Ice cover thickness, Tests, Seasonal variations.

42-3073
Mechanical and environmental stresses in continuously reinforced concrete pavements.
Saxena, S.K., et al, *Transportation research record,* 1986, No.1099, p.12-22, 23 refs.
Dounias, G.T.
Pavements, Reinforced concretes, Loads (forces), Stresses, Temperature effects, Deformation.

42-3074
Concrete pavement joint stiffness evaluation.
Armaghani, J.M., et al, *Transportation research record,* 1986, No.1099, p.22-36, 5 refs.
Lybas, J.M., Tia, M., Ruth, B.E.
Pavements, Concrete strength, Loads (forces), Joints (junctions), Deformation, Temperature effects, Seasonal variations.

42-3075
Prediction of subbase erosion caused by pavement pumping.
Van Wijk, A.J., et al, *Transportation research record,* 1986, No.1099, p.45-57, 32 refs.
Lovell, C.W.
Pavement bases, Pavements, Cements, Erosion, Temperature effects, Deformation, Shear stress, Forecasting, Tests, Climatic factors.

42-3076
Sulfate impurities from deicing salt and durability of portland cement mortar.
Pitt, J.M., et al, *Transportation research record,* 1987, No.1110, p.16-23, 14 refs.
Schluter, M.C., Lee, D.-Y., Dubberke, W.
Chemical ice prevention, Impurities, Concrete durability, Cements, Freeze thaw tests, Tensile properties, Damage, Mortars, X ray diffraction, Solubility.

42-3077
Early strength of concrete patching materials at low temperature.
Nawy, E.G., et al, *Transportation research record,* 1987, No.1110, p.24-34, 16 refs.
Hanaor, A., Balaguru, P.N., Kudlapur, S.
Concrete strength, Bridges, Winter maintenance, Concrete curing, Pavements, Low temperature tests, Shear strength, Flexural strength, Compressive properties.

42-3078
Early age properties of magnesium phosphate-based cements under various temperature conditions.
Popovics, S., et al, *Transportation research record,* 1987, No.1110, p.34-45, 2 refs.
Rajendran, N.
Cement admixtures, Concrete strength, Concrete curing, Temperature effects, Compressive properties, X ray diffraction, Tests.

42-3079
Thermophysical properties of rocks. [Teplofizicheskie svoistva gornykh porod],
Ershov, E.D., ed, Moscow, Universitet, 1984, 204p., In Russian with abridged English table of contents enclosed. 155 refs.
Thermal regime, Frozen ground physics, Frozen ground temperature, Heat transfer coefficient, Permafrost control, Laboratory techniques, Thermopiles, Permafrost thermal properties, Heat transfer.

42-3080
Collapse of a casing in a cavity of perennially frozen rocks. [Smiatie obsadnoĭ kolonny v kaverne v mnogoletnemerzlykh porodakh],
Antipov, V.I., et al, *Neftianoe khoziaĭstvo,* Dec. 1987, No.12, p.27-31, In Russian. 8 refs.
Kurliandskiĭ, A.S.
Boreholes, Permafrost structure, Wells, Well casings, Ice pressure, Ground ice, Caves.

42-3081
Current state of the concept of global glaciations.
Velichko, A.A., *Polar geography and geology,* July-Sep. 1987, 11(3), p.164-183, Translated from Izvestiya AN SSSR, Seriia geograficheskaia, 1987, No.3, p.21-34. 54 refs.
Ice sheets, Polar regions, Pleistocene, Sea ice distribution, Land ice, Glaciation, Arctic Ocean.

42-3082
Climate of the vegetative period during the formation of the icy complex deposits of the Omolon River.
Kiselev, S.V., et al, *Polar geography and geology,* July-Sep. 1987, 11(3), p.184-192, For Russian original see 41-3771. 12 refs.
Kolesnikov, S.F., Rybakova, N.O.
Tundra, Permafrost origin, Palynology, Frozen fines, Loess, Mosses, Grasses, Cryogenic structures, Edoma complex.

42-3083
Anthropogenic eutrophication of the lakes of the Far North (causes, ecological consequences and possible environmental protection measures).
Vekhov, N.V., *Polar geography and geology,* July-Sep. 1987, 11(3), p.193-201, Translated from Geografiia i prirodnye resursy, 1987, No.2, p.87-93. 34 refs.
Lakes, Sewage, Wastes, Water pollution, Water chemistry, Arctic landscapes.

42-3084
Problems and goals of power supply for geological exploration under northern conditions. [Problemy i zadachi energosnabzheniia geologorazvedochnykh rabot v usloviiakh Severa],
Limitovskiĭ, A.M., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenĭ. Geologiia i razvedka,* Feb. 1987, No.2, p.118-120, In Russian.
Golovko, IU.P.
Polar regions, Geological surveys, Electric power, Diesel engines, Fuel transport, Mining, Seasonal variations.

42-3085
Influence of ice conditions on distribution and abundance of polar bears in the Soviet Arctic seas. [Vliianie ledovykh usloviĭ na raspredelenie i chislennost' belogo medvedia v moriakh Sovetskoĭ Arktiki],
Gorbunov, IU.A., et al, *Moscow. Obshchestvo ispytatelei prirody. Biulleten'. Otdel biologicheskiĭ,* Sep.-Oct. 1987, 92(5), p.19-28, In Russian with English summary. 8 refs.
Belikov, S.E., Shil'nikov, V.I.
Sea ice distribution, Fast ice, Snow cover distribution, Ice cover thickness, Pressure ridges, Ice edge, Drift, Floating ice, Pack ice, Animals, Ice surveys, Arctic Ocean.

42-3086
Relationship between cryogenic and non-cryogenic factors of hypergenesis in permafrost. [Sootnoshenie kriogennykh i nekriogennykh faktorov gipergeneza v oblasti vechnoĭ merzloty],
Konishchev, V.N., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Jan.-Feb. 1988, No.1, p.8-14, In Russian. 14 refs.
Permafrost distribution, Active layer, Freeze thaw cycles, Soil composition, Minerals, Organic soils, Soil chemistry, Soil water, Phase transformations.

42-3087
Gas composition of recent polygonal wedge ice (exemplified by the eastern Primorye Lowland of Yakutia). [O gazovom sostave sovremennykh poligonal'no-zhil'nykh l'dov (na primere vostochnoĭ chasti Primorskoĭ nizmennosti IAkutii)],
Novgorodova, E.V., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Jan.-Feb. 1988, No.1, p.72-75, In Russian. 6 refs.
Permafrost structure, Ice wedges, Ice composition, Isotope analysis, Impurities, Bubbles, Gas inclusions, Natural gas, Chemical composition.

42-3088
Latest results of studying avalanche and mudflow danger. [Novelshie rezul'taty izucheniia lavinnoĭ i selevoĭ opasnosti],
Glazovskaia, T.G., et al, *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Jan.-Feb. 1988, No.1, p.75-80, In Russian.
Perov, V.F., Troshkina, E.S.
Slope processes, Avalanches, Mudflows, Countermeasures, Avalanche engineering, Avalanche formation, Avalanche forecasting, Maps, Snow cover distribution, Snow depth, Snow stabilization.

42-3089
Physical, chemical and mechanical bases of cryolithogenesis. [Fiziko-khimicheskie i mekhanicheskie osnovy kriolitogeneza. I.],
Ershov, E.D., *Moscow. Universitet. Vestnik. Seriia 4 Geologiia,* Sep.-Oct. 1987, No.5, p.86-100, In Russian. 9 refs.
Geocryology, Hydrothermal processes, Lithology, Permafrost origin, Permafrost physics, Ground ice, Permafrost distribution, Subsea permafrost, Cryogenic soils, Freeze thaw cycles, Soil chemistry.

42-3090
Freezing and thawing of soil in the area of the Main Botanical Garden, Academy of Sciences USSR, depending on snow cover thickness. [Promerzanie i ottaivanie pochvy na territorii GBS AN SSSR v zavisimosti ot vysoty snegovogo pokrova],
Shokhin, M.V., *Moscow. Glavnyĭ botanicheskiĭ sad. Biulleten',* 1986, Vol.142, p.36-41, In Russian.
Soil freezing, Frost penetration, Measuring instruments, Snow cover distribution, Snow depth, Soil temperature, Heat transfer.

42-3091
Frost resistance and the seasonal development rhythm of introduced woody plants in the Komi ASSR. [Sezonnyĭ ritm razvitiia i zimostoĭkost' drevesnykh introdutsentov v Komi ASSR],
Martynov, L.G., *Moscow. Glavnyĭ botanicheskiĭ sad. Biulleten',* 1986, Vol.139, p.21-27, In Russian. 8 refs.
Introduced plants, Cryogenic soils, Frost action, Frost resistance, Plant ecology, Ecosystems.

42-3092
Elevation and age relationship: raised marine deposits and landforms in glaciated areas: examples based on Canadian Arctic data.
Andrews, J.T., Sea-level research: a manual for the collection and evaluation of data. Edited by O. van de Plassche, Norwich, England, Geo Books, 1986, p.67-95, Refs. p.91-95.
Glacial deposits, Marine deposits, Shoreline modification, Landforms, Sea level, Sediments, Glacier flow, Moraines.

42-3093
Inventory of upslope and downslope iceberg scouring.
Woodworth-Lynas, C.M.T., et al, *Environmental Studies Revolving Funds. Report,* July 1986, No.39, 103p., Refs. p.98-103.
Bass, D.W., Bobbitt, J.
Ice scoring, Icebergs, Ocean bottom, Bottom topography, Radar echoes, Ice mechanics, Soil strength, Statistical analysis, Mapping, Labrador Sea.

42-3094
Management of small ice masses.
Anderson, K.G., et al, *Environmental Studies Revolving Funds. Report,* Aug. 1986, No.42, 195p., With French summary. 21 refs.
Ice control, Sea ice distribution, Iceberg towing, Ice conditions, Cost analysis, Design criteria.

42-3095
Geological, geochemical, and geophysical survey of the geothermal resources at Hot Springs Bay valley, Akutan Island, Alaska.
Motyka, R.J., ed, *Alaska. Division of Geological and Geophysical Surveys. Report,* Mar. 1988, 88-3, 115p. + map, Refs. passim.
Nye, C.J., ed.
Glacial deposits, Geomorphology, Geothermy, Geology, Geophysical surveys, Geochemistry, Landforms, Hydrology, United States—Alaska—Akutan Island.

42-3096
Intercomparison of models of snowmelt runoff. *World Meteorological Organization. Operational Hydrology. Report,* 1986, No.23, WMO No.646, 36p. + appends., With French, Russian and Spanish summaries.
Runoff forecasting, Snowmelt, Climatic factors, Models, Geography.

42-3097
Dividing snow-depositional environments and characteristics of snow in the coastal region of the Japan Sea.
Kawashima, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.1-13, 20 refs., In Japanese with English summary.
Yamada, T., Wakahama, G.
Snow surveys, Snow stratigraphy, Snow depth, Snow water equivalent, Snow temperature, Snow density, Temperature effects, Meltwater, Japan, Sea.

42-3098
Case study of a heavy snowfall in Sapporo.
Endoh, T., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.15-36, 6 refs., In Japanese with English summary.
Wakahama, G.
Snowfall, Snow depth, Snow cover distribution, Snow accumulation, Wind factors, Japan—Sapporo.

42-3099
Studies of the behavior of a snow cover on mountain slope. XXII. Points at which curves C(H) seemingly reach the surface of the snow cover.
Yoshida, Z., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.37-52, 6 refs., In Japanese with English summary.
Huzioka, T.
Snow cover stability, Slope orientation, Snow mechanics, Mountains, Flow rate, Viscous flow, Analysis (mathematics).

42-3100
Studies of the behavior of a snow cover on mountain slope. XXII. Measurements in internal strain of a snow cover.
Hirabayashi, Y., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.53-65, 9 refs., In Japanese with English summary.
Shimizu, H.
Snow cover stability, Slope orientation, Avalanche formation, Mountains, Measuring instruments, Strains, Viscosity, Snow density, Snow slides.

42-3101
Observations of weak layers in a snow cover.
Akitaya, E., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.67-75, 8 refs., In Japanese with English summary.
Shimizu, H.
Snow cover stability, Snow mechanics, Avalanche formation, Snow slides, Mountains, Cracks, Snowfall, Air temperature.

42-3102
Study on the mechanism of avalanche release at the Nissho Pass, Hokkaido, Japan.
Shimizu, H., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.77-90, 13 refs., In Japanese with English summary.
Akitaya, E.
Avalanche formation, Avalanche deposits, Depth hoar, Snow slides, Accidents, Snow mechanics, Temperature gradients, Snow density, Solar radiation, Japan—Hokkaido.

42-3103
Internal structures of large-scale avalanches revealed by a frequency analysis of impact forces.
Nishimura, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.91-98, 9 refs., In Japanese with English summary.
Maeno, N., Kawada, K.
Avalanche formation, Avalanche deposits, Snow density, Impact strength, Velocity.

42-3104
Numerical computation of snow avalanche motion in a three-dimensional topography.
Maeno, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.99-110, 20 refs., In Japanese with English summary.
Nishimura, K.
Avalanche mechanics, Snow density, Snow depth, Viscous flow, Topographic features, Velocity, Mathematical models.

42-3105
Discriminant function analysis applied to determining an initiation condition of drifting snow.
Nishimura, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.111-117, 8 refs., In Japanese with English summary.
Maeno, N.
Snowdrifts, Snow mechanics, Wind velocity, Air temperature, Temperature variations, Analysis (mathematics), Antarctica—Showa Station, Antarctica—Mizuho Station.
Discriminant functions were applied to determining the initial condition of drifting snow. The variables used in the analysis were air temperatures and wind speeds observed in Hokkaido and Antarctica. Critical conditions obtained from linear discriminant functions had an accuracy better than 74% for each observation. The threshold wind speed obtained from the data at Showa Station was almost constant (11 m/s) in the low temperature range and agreed well with the one at Mizuho Station; it may prove the validity of this method for determining the initiation condition objectively. A quadratic discriminant function sometimes led to so unreasonable results for the low temperature range that the accuracy was almost the same or somewhat less than the linear function. So far it was observed that the threshold wind speed decreases with lowering temperature above -10 C. But is was not possible to express this temperature dependence by both a linear and a quadratic discriminant function. The accuracies of discrimination obtained from both functions for the wide range of temperatures (-60 to about 0 C) and wind speeds (0 to about 30 m/s) were in the range of 70 to about 80%. (Auth.)

42-3106
Structures and new classification of snow and ice on roads.
Maeno, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.119-133, 7 refs., In Japanese with English summary.
Narita, H., Nishimura, K., Naruse, R.
Road icing, Snow cover structure, Ice cover, Ice structure, Snow removal, Ice removal, Meteorological factors, Snow compaction, Classifications, Surface roughness, Traffic.

42-3107
Characteristics of ablation process of snow and ice on roads.
Naruse, R., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.135-149, 12 refs., In Japanese with English summary.
Ishikawa, N., Takeichi, K., Maeno, N.
Road icing, Snow hardness, Ablation, Albedo, Temperature effects, Ice hardness, Mass balance, Snow depth, Ice cover thickness, Traffic.

42-3108
Heat balance characteristics of road snow.
Ishikawa, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.151-162, 11 refs., In Japanese with English summary.
Naruse, R., Maeno, N.
Snow depth, Roads, Snow heat flux, Heat balance, Meteorological factors, Safety, Snowmelt, Albedo, Traffic.

42-3109
Experiments on rapid frazil ice production in a wind-generated open water.
Ushio, S., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.163-170, 5 refs., In Japanese with English summary.
Ono, N., Wakatsuchi, M.
Frazil ice, Ice formation, Sea ice, Polynyas, Brines, Heat transfer, Water temperature, Experimentation, Air temperature, Wind velocity.

42-3110
Air-sea-ice observation system of Hokkaido University—scientific plan.
Aota, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences,* 1987, No.46, p.179-183, In Japanese.
Ice air interface, Sea ice, Ice water interface, Computer applications.

42-3111
Beaufort Sea (SALE 97) information update.
Becker, P.R., ed, Outer Continental Shelf Environmental Assessment Program, Anchorage, AK, U.S. National Oceanic and Atmospheric Administration, Apr. 1988, 81p., Refs. passim. For selected papers see 42-3112 through 42-3115.
Thermal regime, Sea ice distribution, Ice scoring, Oil spills, Roads, Remote sensing, Shoreline modification, Beaufort Sea.

42-3112
Causeway effect: modification of nearshore thermal regime resulting from causeways.
Stringer, W.J., Beaufort Sea (SALE 97) information update. Edited by P.R. Becker. Outer Continental Shelf Environmental Assessment Program, Anchorage, AK, U.S. National Oceanic and Atmospheric Administration, Apr. 1988, p.1-10, 1 ref.
Roads, Thermal regime, Construction, Remote sensing, Suspended sediments, Water temperature, Sea water, Pipelines, Docks, Offshore structures, Models, United States—Alaska—Prudhoe Bay.

42-3113
Summertime sea ice intrusions in the Chukchi Sea.
Stringer, W.J., et al, Beaufort Sea (SALE 97) information update. Edited by P.R. Becker. Outer Continental Shelf Environmental Assessment Program, Anchorage, AK, U.S. National Oceanic and Atmospheric Administration, Apr. 1988, p.11-19, For another version see 40-648. 3 refs.
Groves, J.E.
Sea ice distribution, Remote sensing, Ice edge, Statistical analysis, Ice conditions, Seasonal variations, Mapping, Chukchi Sea.

42-3114
Deepwater limit of ice gouging on the Beaufort Sea shelf.
Reimnitz, E., et al, Beaufort Sea (SALE 97) information update. Edited by P.R. Becker. Outer Continental Shelf Environmental Assessment Program, Anchorage, AK, U.S. National Oceanic and Atmospheric Administration, Apr. 1988, p.21-26, 1 ref.
Ice scoring, Shore erosion, Shoreline modification, Sediment transport, Sea ice, Drift, Beaufort Sea.

42-3115
Baffin Island Oil Spill (BIOS) Project: a review.
Manen, C.A., Beaufort Sea (SALE 97) information update. Edited by P.R. Becker. Outer Continental Shelf Environmental Assessment Program, Anchorage, AK, U.S. National Oceanic and Atmospheric Administration, Apr. 1988, p.59-81, 36 refs.
Oil spills, Oil recovery, Dispersions, Countermeasures, Experimentation, Water pollution, Soil pollution.

42-3116
Analysis of the reliability of overhead transmission lines and electric networks under ice and wind loads. [Osobennosti analiza nadezhnosti vozdushnykh linii elektroperedachi i elektricheskikh setei pri gololednykh i vetrovykh vozdeistviiakh]
Kinash, B.M., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Energetika,* Sep. 1987, No.9, p.48-50, In Russian. 1 ref.
Power line icing, Ice loads, Wind factors, Design.

42-3117
Transportation and assembling of block containers under West Siberian conditions. [Osobennosti transportirovaniia i montazha blochnykh ustroistv v usloviiakh Zapadnoi Sibiri]
Rastorguev, G.A., *Promyshlennoe stroitel'stvo,* Aug. 1987, No.7, p.19-21, In Russian.
Construction materials, Transportation, Storage, Modular construction, Railroads, Motor vehicles, Marine transportation, Rivers.

42-3118
Ways of decreasing heat loss through windows in northern regions. [Sposob umen'sheniia teplopoter' cherez okna v severnykh raionakh]
Butlitskii, A.E., et al, *Promyshlennoe stroitel'stvo,* Mar. 1987, No.3, p.39-40, In Russian. 3 refs.
Terent'ev, O.L.
Houses, Thermal insulation, Walls, Windows, Heat loss, Design, Industrial buildings, Residential buildings.

42-3119
Radioactive labeling of moisture transfer in freezing peat. [Issledovanie vlagoperenosa v promerzaiushchem torfe s pomoshch'iu radioaktivnoi metki]
Gamaiunov, N.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal,* 1986, No.12, p.12-20, In Russian. 2 refs.
Stotland, D.M., Tovbin, I.B., Kazakov, S.L.
Organic soils, Peat, Frost penetration, Soil water migration, Isotopic labeling.

42-3120
Influence of water solution of sodium nitrite on frozen ground softening processes. [Vliianie vodnogo rastvora nitrita natriia na razuprochniaiushchie protsessy v merzlykh gruntakh]
Migliachenko, V.P., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal,* 1987, No.2, p.23-25, In Russian.
Earthwork, Excavation, Frozen ground, Artificial melting, Frost protection, Chemical ice prevention.

42-3121
Influence of natural and climatic conditions on the adhesive-cryogenic processes in stripping. [Vliianie prirodno-klimaticheskikh uslovii na adgezionno-kriogennye protsessy pri vskryshnykh rabotakh]
Mochalov, V.I., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Gornyi zhurnal,* 1987, No.4, p.81-83, In Russian.
Excavation, Permafrost physics, Adhesion, Frozen rock strength, Equipment, Ice adhesion, Mining.

42-3122
Classification of heterogeneous territorial units of vegetational cover exemplified by the tundra zone vegetation. [Klassifikatsiia neodnorodnykh territorial'nykh edinits rastitel'nogo pokrova na primere rastitel'nosti tundrovoi zony]
Katenin, A.E., *Botanicheskii zhurnal,* Feb. 1988, 73(2), p.186-197, In Russian with English summary. Refs. p.196-197.
Tundra, Subarctic landscapes, Cryogenic soils, Vegetation patterns, Plant ecology, Ecosystems, Classifications.

42-3123
Zonal changes in vegetational cover of the north European Priuralye. [Zonal'nye izmeneniia rastitel'nogo pokrova na severe evropeĭskogo Priural'ia],
Kozhevnikov, IU.P., *Botanicheskiĭ zhurnal,* Feb. 1988, 73(2), p.233-244, In Russian. 6 refs.
Subarctic landscapes, Vegetation, Tundra, Taiga, Plant ecology, Ecosystems, Subpolar regions.

42-3124
Hydraulic rupture of perennially frozen rocks. [Gidrorazryv mnogoletnemerzlykh gornykh porod],
Griaznov, G.S., et al, *Neftianoe khoziaĭstvo,* June 1987, No.6, p.18-19, In Russian.
Kuznetsov, V.G., Molotkov, IU.A.
Permafrost physics, Permafrost thermal properties, Oil wells, Gas wells, Well casings, Permafrost hydrology, Ground water, Phase transformations, Ice pressure.

42-3125
Prospects for combined use of peat resources of the Urals and western Siberia for year-round mining of peat. [Perspektivy kompleksnogo ispol'zovaniia torfianykh resursov Urala i Zapadnoĭ Sibiri pri kruglogodichnoĭ dobyche torfa],
Aleksandrov, B.M., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal,* 1987, No.10, p.49-56, In Russian. 7 refs.
Peat, Mining, Active layer, Permafrost depth, Drying.

42-3126
Calculating the force of shattering seasonally frozen ground. [Raschet sily rykhleniia merzloĭ porody sezonnogo promerzaniia],
Kislenko, A.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal,* 1987, No.8, p.77-80, In Russian. 2 refs.
Tanin-Shakhov, A.V.
Earthwork, Analysis (mathematics), Excavation, Seasonal freeze thaw, Frozen ground, Equipment, Design.

42-3127
Studying the settlement of peat during open mining of high ice content placer deposits. [Issledovanie osadki torfov pri otkrytoĭ razrabotke vysokol'distykh rossypeĭ],
Potapova, T.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal,* 1987, No.6, p.21-23, In Russian.
Morozov, V.N., Egorova, E.L., Frolenko, V.A.
Placer mining, Peat, Frost penetration, Solar radiation, Ice melting, Settlement (structural).

42-3128
Designing the thermodynamic equipment for cleaning buckets and the intermediate spaces of excavators from adhering frozen rocks. [Metodika rascheta parametrov termodinamicheskoĭ ustanovki dlia ochistki kovshei i mezhkovshovogo prostranstva ekskavatora ot namerzsheĭ porody],
Alekseev, A.F., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Gornyĭ zhurnal,* 1987, No.6, p.80-83, In Russian. 3 refs.
Morit, R.E.
Mining, Frozen ground temperature, Excavation, Ice adhesion, Countermeasures, Equipment.

42-3129
Sudden melting of a thin vertical flat plate in a Darcian free convection flow.
Ingham, D.B., et al, *Acta mechanica,* Feb. 1988, 71(1-4), p.77-93, 20 refs.
Pop, I.
Ground thawing, Porous materials, Thermal insulation, Thermal conductivity.

42-3130
Hubbard Glacier.
Barnes-Svarney, P., *Earth science,* Fall 1987, 40(3), p.20.
Ice dams, Glacial lakes, Glacier oscillation, United States—Alaska—Hubbard Glacier.

42-3131
Phase unwrapping of signals propagated under the Arctic ice crust: a statistical approach.
Moura, J.M.F., et al, *IEEE transactions on acoustics, speech, and signal processing,* May 1988, 36(5), p.617-630, 18 refs.
Baggeroer, A.B.
Underwater acoustics, Subglacial observations, Acoustic measurement.

42-3132
At the construction site of the apatite-nepheline factory No.3 PO "Apatit". [Na stroitel'stve apatito-nefelinovoĭ fabriki No.3 PO "Apatit"],
Nesterov, V.V., et al, *Promyshlennoe stroitel'stvo,* Feb. 1987, No.2, p.11-15, In Russian.
Lugovoĭ, V.L., Petysh, E.B.
Mining, Formwork (construction), Industrial buildings, Residential buildings, Permafrost beneath structures, Foundations, Concrete structures, Winter concreting, Heating, Polar regions.

42-3133
Improving the efficiency of winter concreting. [Rezervy povysheniia effektivnosti betonnykh rabot v zimnee vremia],
Maksimov, S.V., et al, *Promyshlennoe stroitel'stvo,* Feb. 1987, No.2, p.15-16, In Russian. 4 refs.
Shupikov, S.A., Dolbichkin, A.V.
Winter concreting, Concrete placing, Concrete hardening, Electric heating, Reinforced concretes.

42-3134
Increasing the service life of wooden structures in the North. [Povyshenie dolgovechnosti dereviannykh konstruktsiĭ pri ekspluatatsii na Severe],
Varfolomeev, IU.A., et al, *Promyshlennoe stroitel'stvo,* Feb. 1987, No.2, p.26-27, In Russian. 2 refs.
Poromova, T.M., Ziablova, E.M.
Piles, Wooden structures, Countermeasures, Foundations, Active layer.

42-3135
Industrial construction and architecture for extreme climatic conditions (from the 8th international symposium in Finland). [Promyshlennoe stroitel'stvo i arkhitektura v ekstremal'nykh usloviiakh (po materialam VIII mezhdunarodnogo simpoziuma v Finliandii)],
Korolev, V.I., *Promyshlennoe stroitel'stvo,* Feb. 1987, No.2, p.27-30, In Russian.
Modular construction, Permafrost beneath structures, Industrial buildings, Pipelines, Hydraulic structures, Concrete structures, Polar regions.

42-3136
Arrangement of storage facilities under extreme northern conditions. [K voprosu organizatsii skladskikh khoziaĭstv v usloviiakh Kraĭnego Severa],
Gimmel'farb, A.IA., *Promyshlennoe stroitel'stvo,* May 1986, No.5, p.20-23, In Russian. 9 refs.
Storage, Permafrost beneath structures, Construction materials, Construction equipment, Transportation, Design, Polar regions, Industrial buildings, Residential buildings.

42-3137
Economy of resources at construction sites of the Noril'sk industrial district. [Ekonomiia resursov na stroĭkakh Noril'skogo promyshlennogo raĭona],
Ivanova, O.S., et al, *Promyshlennoe stroitel'stvo,* May 1986, No.5, p.23-24, In Russian.
Mironov, S.A., Lukina, F.Kh.
Winter concreting, Reinforced concretes, Permafrost thermal properties, Concrete structures, Foundations, Piles, Concrete placing, Concrete admixtures, Underground facilities, Permafrost beneath structures.

42-3138
Construction of surface foundations for fastening reinforced concrete supports of overhead power lines in swamps. [Primenenie poverkhnostnykh fundamentov dlia zakrepleniia zhelezobetonnykh opor VL na bolotakh],
Sigle, R.G., et al, *Energeticheskoe stroitel'stvo,* Mar. 1988, No.3, p.44-46, In Russian.
Vinogradov, D.E.
Power line supports, Foundations, Swamps.

42-3139
Use of secondary products of microbiologically obtained amino acids as admixtures to cements and concretes. [Ispol'zovanie vtorichnykh produktov mikrobiologicheskogo proizvodstva aminokislot v kachestve dobavok v betony i rastvory],
Savelov, I.G., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1988, No.1, p.61-63, In Russian. 5 refs.
Matveeva, L.G., IArtseva, L.G., Novikova, N.V.
Frost resistance, Concrete strength, Waterproofing, Concrete admixtures, Cements, Concretes.

42-3140
Electric heating of concrete mixtures for the Far North. [Betonirovanie s elektrorazogrevom smesi v usloviiakh Kraĭnego Severa],
Bondarenko, P.N., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1988, No.1, p.79-82, In Russian. 6 refs.
Baksheev, D.C.
Winter concreting, Concrete freezing, Concrete strength, Concrete aggregates, Electric heating, Concrete placing, Frost resistance.

42-3141
Graphic-analytical method of calculating the beginning of ice breakup for the upper pool of hydraulic power systems. [Grafoanaliticheskiĭ metod rascheta nastupleniia ledokhoda v verkhnem b'efe gidrouzla],
Fomichev, B.S., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1988, No.1, p.82-86, In Russian. 6 refs.
Moroz, A.A.
Icebound lakes, Ice breakup, Forecasting, Electric power.

42-3142
Heat transfer between freezing (thawing) moist ground and air flow. [Teploobmen promerzaiushchikh (protaivaiushchikh) vlazhnykh gruntov s vozdushnym potokom],
Mukhetdinov, N.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1988, No.1, p.118-122, In Russian. 6 refs.
Soils, Soil water, Saturation, Air flow, Soil freezing, Freeze thaw cycles, Heat transfer, Phase transformations, Stefan problem.

42-3143
Joint solution of problems on ground consolidation and thawing. [Sovmestnoe reshenie zadach konsolidatsii i ottaivaniia grunta],
Klement'ev, A.F., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1988, No.1, p.122-125, In Russian. 4 refs.
Klement'eva, E.A.
Permafrost thermal properties, Active layer, Freeze thaw cycles, Ground thawing, Soil mechanics.

42-3144
Automation of low-cycle tests of pipe joints in the climatic temperature range. [Avtomatizatsiia malotsiklovykh ispytaniĭ stykov trubchatykh konstruktsiĭ v diapazone klimaticheskikh temperatur],
Shuts, S.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura,* 1988, No.1, p.125-127, In Russian. 4 refs.
Kargal'tsev, V.V., Kazarnovskiĭ, V.S.
Pipelines, Joints (junctions), Artificial freezing, Laboratory techniques, Test equipment, Fracture zones, Crack propagation, Frost resistance.

42-3145
Environmental factors and standards for atmospheric obscurants, climate and terrain.
Opitz, B.K., et al, MP 2309, AirLand Battlefield Environment Executive Committee, Environmental Standards for Material Design Group, Oct. 1987, 137p., 7 refs. First edition. ALBE report 1, ESMDG pamphlet.
Miers, B.T., Shirkey, R.C., Bates, R.E., Robinson, J.H., West, H.W.
Military operation, Snow loads, Environments, Icing, Visibility, Ice fog, Sound waves, Freeze thaw cycles, Topographic features, Climatic factors, Military facilities.

42-3146
Ice mechanics: risk to offshore structures.
Sanderson, T.J.O., London, Graham & Trotman, 1988, 253p., Refs. p.236-245.
Rheology, Ice pressure, Wind factors, Ice mechanics, Ice solid interface, Ice loads, Offshore structures, Sea ice distribution, Impact strength, Design, Fracturing, Ice conditions, Analysis (mathematics).

42-3147
Report of pit-wall observations of snow cover in Sapporo 1986-87.
Akitaya, E., *Low temperature science (Teion kagaku). Series A Physical sciences. Data report,* 1987, No.46, p.1-9, 4 refs., In Japanese.
Snow accumulation, Snow water equivalent, Snowfall, Seasonal variations, Statistical analysis, Japan—Sapporo.

42-3148
Radiation measurements of snowy season in 1987 at Sapporo.
Ishikawa, N., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report,* 1987, No.46, p.11-18, 1 ref., In Japanese.
Solar radiation, Snowfall, Snow depth, Air temperature, Heat flux, Albedo, Statistical analysis, Japan—Sapporo.

42-3149
Data of snow survey conducted during short period in the coastal region along the Japan Sea.
Kawashima, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report,* 1987, No.46, p.19-24, 2 refs., In Japanese.
Yamada, T., Wakahama, G.
Snow surveys, Snow accumulation, Shores.

42-3150
Observations of snow cover in apple garden and snow structure around dwarf apple tree in Hirosaki District.
Narita, H., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report,* 1987, No.46, p.25-38, 1 ref., In Japanese.
Nishimura, K., Naruse, R., Maeno, N.
Snow cover distribution, Snow cover structure, Vegetation factors, Snow depth.

42-3151
Observations of snow jam in Lake Hisago, Daisetsu Massive.
Kawashima, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report,* 1987, No.46, p.39-43, 2 refs., In Japanese.
Yamada, T., Wakahama, G.
Snow cover structure, Lake water, Lake ice, Snow depth, Snow crystal structure.

42-3152
Distribution of pack ice off Okhotsk Sea coast of Hokkaido observed with sea ice radar network, January-April, 1987.
Aota, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences. Data report,* 1987, No.46, p.45-70, In Japanese.
Sea ice distribution, Pack ice, Radar echoes, Seasonal variations.

42-3153
Studies on preferred growth of sea ice grain.
Kawamura, T., *Hokkaido University, Sapporo, Japan. Institute of Low Temperature Science. Contributions. Series A,* 1987, No.36, p.1-29, 20 refs.
Ice growth, Sea ice, Ice crystal structure, Nucleating agents, Nucleation rate, Photography.

42-3154
Field studies on response of a floating sea ice sheet to a steadily moving load.
Takizawa, T., *Hokkaido University, Sapporo, Japan. Institute of Low Temperature Science. Contributions. Series A,* 1987, No.36, p.31-76, 30 refs.
Floating ice, Dynamic loads, Ice sheets, Sea ice, Ice cover thickness, Loads (forces), Experimentation, Viscoelastic materials, Ice temperature, Velocity, Wave propagation.

42-3155
Beaufort Sea mesoscale circulation study: hydrography helicopter operations, April, 1987.
Aagaard, K., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA data report,* Mar. 1988, ERL PMEL-22, 25p., 4 refs.
Salo, S., Krogslund, K.
Hydrography, Sea water, Water chemistry, Ice conditions, Water temperature, Salinity, Statistical analysis, Beaufort Sea.

42-3156
Flood of October 1986 at Seward, Alaska.
Jones, S.H., et al, *U.S. Geological Survey. Water-Resources investigations report,* 1988, 87-4278, 43p. + maps, Refs. p.41-43.
Zenone, C.
Floods, Soil erosion, Stream flow, Slopes, Water reserves, Damage, United States—Alaska—Seward.

42-3157
Ice thickness data, winter 1983-1984. Environment Canada, Atmospheric Environment Service, Ice Climatology and Applications Division, Apr. 20, 1988, 63p., In English and French.
Ice cover thickness, Freezeup, Ice breaking, Ice surveys, Snow depth, Statistical analysis, Canada.

42-3158
Alaska snow surveys and Federal-State-Private cooperative snow surveys.
Clagett, G.P., U.S. Dept. of Agriculture, Soil Conservation Service, 1987, 17p. + map.
Snow surveys, Snow water equivalent, Snow depth, Precipitation (meteorology), Statistical analysis, Water supply, United States—Alaska.

42-3159
XYFREZ.4 user's manual.
O'Neill, K., *U.S. Army Cold Regions Research and Engineering Laboratory,* Dec. 1987, SR 87-28, 55p., ADA-191 466, 3 refs.
Heat transfer, Computer programs, Phase transformations, Mathematical models, Latent heat, Heat capacity, Temperature distribution.
Using the program XYFREZ, version 4, one may simulate two-dimensional conduction of heat, with or without phase change. The mathematical method employed uses finite elements in space and finite differences in time, and includes latent heat effects through a singularity in the heat capacity. The user need have no real familiarity with either the underlying equations or the numerical procedures. He must only specify material properties, geometrical features, initial and boundary conditions, and information on the desired manner and duration of simulation through time. Heterogeneous materinl properties may be specified. Boundary conditions currently implemented allow one to specify 1) temperature values which vary arbitrarily in space and time, 2) convective conditions, via a heat transfer coefficient and an ambient temperature, and 3) a no-flux or symmetry condition. The program outputs computed temperature values at numerical mesh points, as well as information for later plotting. From the latter one may see the mesh configuration as well as the phase change isotherm location on it over time.

42-3160
Russian-English Arctic environment glossary.
U.S. Naval Technical Intelligence Center. Foreign Languages Services Division, Apr. 1988, 245p., NTIC No.8608, Third edition (revised and enlarged). 17 supplements (p.197-243). 17 refs. For 2nd ed. (NISC No.8219, Mar. 1987), see 41-2887.
Ice, Snow, Dictionaries, Terminology, Geocryology, Polar regions.

42-3161
Model of ionic defect in symmetrical hydrogen-bonded ice: continuum approach.
Kriachko, E.S., *Solid state communications,* Mar. 1988, 65(12), p.1609-1612, 21 refs.
Ice structure, Molecular structure, Hydrogen bonds.

42-3162
Airframe icing.
Kennedy, N.G., *AOPA pilot,* Nov. 1987, 30(11), p.81-82.
Aircraft icing, Ice prevention.

42-3163
Winter thaw.
Twombly, M.R., *AOPA pilot,* Dec. 1987, 30(12), p.59-63.
Aircraft icing, Ice prevention.

42-3164
Unmentioned snow hazard.
Horne, T.A., *AOPA pilot,* Jan. 1988, 31(1), p.32.
Aircraft icing, Snow accumulation, Safety.

42-3165
Raman spectra of natural clathrates in deep ice cores.
Nakahara, J., et al, *Philosophical magazine B,* Mar. 1988, 57(3), p.421-430, 14 refs.
Shigesato, Y., Higashi, A., Hondoh, T., Langway, C.C., Jr.
Ice cores, Clathrates.

42-3166
Ion-chromatographic measurements of ammonium, fluoride, acetate, formate and methanesulphonate ions at very low levels in antarctic ice.
Saigne, C., et al, *Analytica chimica acta,* 1987, Vol.203, p.11-21, 13 refs.
Kirchner, S., Legrand, M.
Ice composition, Ions, Sampling.
Ion chromatography is used to determine the concentrations of organic (formate, acetate and methanesulphonate) and inorganic (fluoride and ammonium) ions present in antarctic ice at less than a 100 millionth g/g levels. With suitable columns, the simultaneous measurement of these ions requires only 6 min. A sample volume of 5 ml is sufficient to reach the billionth g/g level. The determination of such low concentrations requires stringent contamination-free techniques. For formate and acetate, the samples should never come into contact with plastics. Except for methanesulphonate, all the ions studied can be produced by dissolution of the various gaseous compounds present in a polluted atmosphere. Therefore a glass device with pure nitrogen circulation was designed for air-free melting of samples. To prevent possible biological activity on organic matter, samples were analyzed immediately after melting. Measurements of ammonium ion in these antarctic ice samples demonstrate that the problem of contamination by surrounding ammonia was not completely eliminated in previous studies. The serious contamination problems encountered, particularly for carboxylic acids, cast doubt on some earlier results for remote areas. (Auth.)

42-3167
Effect of mass convection on vacuum-sublimation in an initially partially filled frozen porous medium.
Fey, Y.C., et al, *Drying technology,* Mar. 1988, 6(1), p.69-94, 9 refs.
Boles, M.A.
Sublimation, Porous materials, Drying.

42-3168
Demineralization and fractionation during snow melting.
Supatashvili, G.D., *Geochemistry international,* 1981, 18(6), p.81-88, For Russian original see 37-3194. 26 refs.
Snow composition, Minerals, Snowmelt, Meltwater.

42-3169
Hydrography.
Launiainen, J., et al, Baltic Sea Environment Proceedings, No.17 B. First periodic assessment of the state of the marine environment of the Baltic Sea area, 1980-1985; Background document, Helsinki, Baltic Marine Environment Protection Commission, June 1987, p.7-34, Refs. p.32-34.
Matthäus, W., Fonselius, S., Francke, E.
Hydrography, Ice conditions, Runoff, Ocean currents, Sea ice distribution, Meteorological factors, Baltic Sea.

42-3170
Nitrate trace determinations in snow and firn core samples of ice shelves at the Weddell Sea, Antarctica.
Neubauer, J., et al, *Atmospheric environment,* 1988, 22(3), p.537-545, 37 refs.
Heumann, K.G.
Snow composition, Chemical analysis, Firn, Seasonal variations, Antarctica—Weddell Sea.
The definitive method of isotope dilution mass spectrometry was applied to determine nitrate traces in surface snow and firn core samples of different ice shelves along the Weddell Sea and in precipitation near the Antarctic Peninsula. Three of a total number of 7 depth profiles analyzed showed weak seasonal variations with a trend to nitrate concentration maxima in summer and minima in winter. The average nitrate concentration of the depth profiles down to 220 cm lay in the range of 38-93 ng/g which agrees with other ice shelf analyses. The highest levels in ice shelf depth profiles are in the same range as those analyzed at the South Pole. No marine influence has been found for the nitrate concentration in contrast to the situation for chloride. The mean nitrate concentrations in new snow, in old surface snow and in firn core samples were 176, 107, and 60 ng/g, respectively, indicating a substantial decrease with time. (Auth. mod.)

42-3171
Vostok (Antarctica) ice core: atmospheric chemistry changes over the last climatic cycle (160,000 years).
Legrand, M.R., et al, *Atmospheric environment,* 1988, 22(2), p.317-331, 50 refs.
Lorius, C., Barkov, N.I., Petrov, V.N.
Aerosols, Paleoclimatology, Ice cores, Impurities, Ice composition, Antarctica—Vostok Station.
A 2083 m deep ice core from Vostok Station has been used for a comprehensive study of all major ions originating from aerosols deposited over the last climatic cycle (160,000 a), as depicted from the isotopic composition of the ice. For the first time in deep ice core studies, a good balance between anions and cations is obtained throughout the profile. This allows the clear identification of marine salts (i.e. sea salt and Na2SO4), terrestrial salts (calcium and magnesium associated with nitrates and sulfates) and strong mineral acids. Concentration profiles confirm that both marine and terrestrial aerosol inputs were higher during cold climate conditions than during the Last Interglacial and the Holocene stages. High concentration peaks (up to 5 and 30 times the Holocene values of marine and terrestrial contents, respectively) are in particular observed during the very cold climate characterizing the end of the penultimate glacial age and the Last Glacial Maximum which terminated around 15 ka B.P. These peaks reflect strengthened sources and transport during full glacial conditions, linked to higher wind speeds, more extensive arid areas on the continents and the greater exposure of continental shelves. As opposed to marine and terrestrial inputs, acidic gas-derived impurity concentrations remain relatively stable over the whole climatic cycle. This would indicate the absence of a long-term relationship between volcanism and climate. (Auth. mod.)

42-3172
Numerical model of landform development by glacial erosion.
Harbor, J.M., et al, *Nature,* May 26, 1988, 333(6171), p.347-349, 12 refs.
Hallet, B., Raymond, C.F.
Landforms, Glacier flow, Glacial erosion, Mathematical models.

42-3173
Netherlands South Georgia Scientific Expedition. [Nederlandse Wetenschappelijke South Georgia Expeditie],
Gremman, N.J.M., et al, *Circumpolar journal*, 1988, 3(1-2), p.1-53, In Dutch with English summary. Refs. p.50-53.
Expeditions, Environmental protection, South Georgia.
In the southern summer of 1986/87 a Dutch expedition visited the subantarctic island of South Georgia. The aim of the expedition was to collect biological information on the island's ecosystems and the influence of man upon them, and to enhance the appreciation of the value and beauty of the subantarctic regions and the interest in nature conservation in this region. The expedition spent one month on South Georgia. Another week was spent in the Falkland Islands, where some biological information was also collected. Botanical studies focused on the consequences of the isolated location of the island, particularly on how the plants got there and how they survive. Avian species are identified, counted, and studied as to breeding behavior and success. Birds seen were penguins, albatross, petrels, prions, skuas, shags, and a South Georgia pintail. Reindeer, brown rats, and seals were the mammals seen and counted.

42-3174
Clues to Arctic soil erosion from cryo-electron microscopy of smectite.
Tazaki, K., et al, *Nature*, May 19, 1988, 333(6170), p.245-247, 17 refs.
Fyfe, W.S., Iwatsuki, M.
Soil erosion, Ground ice, Freeze thaw cycles, Soil formation.

42-3175
Expedition Ymer-80 final report. [Expeditionen Ymer-80 en slutrapport],
Hoppe, G., ed, Stockholm, Kung. Vetenskapsakademien Informationsandelnigeng, [1987], 211p., In Swedish. Publications list p.196-211.
Bjorn-Rasmussen, S., ed, Roland, M.W., ed.
Expeditions, Sea ice distribution, Salinity, Hydrogeochemistry, Pack ice, Water chemistry, Climatology, Climatic changes, Glaciology, Glacier mass balance, Barents Sea.

42-3176
Effects of El Nino-Southern Oscillation and North Pacific weather patterns on interannual variability in the subarctic Bering Sea.
Niebauer, H.J., *Journal of geophysical research*, May 15, 1988, 93(C5), p.5051-5068, 34 refs.
Sea ice distribution, Ice conditions, Air temperature, Sea water, Surface temperature, Geophysical surveys, Wind factors, Meteorological factors, Bering Sea.

42-3177
Naive zero-dimensional sea ice model.
Thorndike, A.S., *Journal of geophysical research*, May 15, 1988, 93(C5), p.5093-5099, 2 refs.
Ice models, Sea ice distribution, Remote sensing, Microwaves, Ice conditions, Ice surface, Brightness, Temperature effects, Analysis (mathematics), Ice deformation.

42-3178
Response of a floating sea ice sheet to a steadily moving load.
Takizawa, T., *Journal of geophysical research*, May 15, 1988, 93(C5), p.5100-5112, 20 refs.
Floating ice, Dynamic loads, Sea ice, Vehicles, Wave propagation, Velocity, Ice deformation, Analysis (mathematics).

42-3179
Application of decision analysis to design of arctic offshore structures.
Bein, P., IABSE Symposium, Tokyo, 1986. Preliminary report. IABSE reports, Vol.51. Safety and quality assurance of civil engineering structures, Zurich, ETH-Hönggerberg, [1986], p.189-196, With French and German summaries. 13 refs.
Offshore structures, Ice loads, Design criteria, Ice solid interface.

42-3180
Quality management for arctic offshore concrete structures.
Iguro, M., et al, IABSE Symposium, Tokyo, 1986. Preliminary report. IABSE reports, Vol. 51. Safety and quality assurance of civil engineering structures, Zurich, ETH-Hönggerberg, [1986], p.309-316, With French and German summaries. 3 refs.
Suzuki, T., Niwa, M.
Offshore structures, Concrete structures, Concrete durability, Lightweight concretes, Freeze thaw cycles, Waterproofing, Reinforced concretes, Tests.

42-3181
On the surface drift of the southern ocean.
Lutjeharms, J.R.E., et al, *Journal of marine research*, May 1988, 46(2), p.267-279, 32 refs.
Shannon, L.V., Beekman, L.J.
Ocean currents, Drift, Flow rate.
Drift rates of the sea surface have been calculated for the South Atlantic and South Indian Ocean sectors of the southern ocean using drift cards and FGGE buoys. Drift patterns and drift rates, based on results from 40,000 plastic drift cards placed from 1978 to 1981, indicate significant equatorward surface exchange between the Southern Ocean and subtropical ocean gyres. Card drift rates increase with latitude up to the 40-45S zone. Average zonal drift rates lie between 10.3 cm/s and 16.4 cm/s. Zonally averaged drift rates of FGGE buoys are also at a maximum between 40 and 45S but are 15% higher; lowest rates are 12.2 cm/s. Significant differences in the drift rates between sectors of the same zone reflect the influence of bottom topography. (Auth.)

42-3182
Wetting of polystyrene and urethane roof insulations in the laboratory and on a protected membrane roof.
Tobiasson, W., et al, *Journal of thermal insulation*, Oct. 1987 11(2), MP 2337, p.108-119, 13 refs. For another source see 42-2926.
Greatorex, A., Van Pelt, D.
Roofs, Insulation, Cellular plastics.

42-3183
Snowmelt runoff in suburban environments.
Buttle, J.M., et al, *Nordic hydrology*, 1988, 19(1), p.19-40, 34 refs.
Xu, F.
Snowmelt, Meltwater, Runoff.

42-3184
Winter study of air, cloud and precipitation chemistry in Ontario, Canada.
Isaac, G.A., et al, *Atmospheric environment*, 1987, 21(7), p.1587-1600, 21 refs.
Daum, P.H.
Atmospheric composition, Air pollution, Aerosols, Snow composition, Airborne equipment.

42-3185
Cluster analysis applied to atmospheric aerosol samples from the Norwegian Arctic.
Saucy, D.A., et al, *Atmospheric environment*, 1987, 21(7), p.1649-1657, 17 refs.
Anderson, J.R., Buseck, P.R.
Aerosols, Haze, Scanning electron microscopy, Norway—Spitsbergen.

42-3186
Large size of hyperbolic towers makes icing control essential.
Harding, R.C., et al, *Power*, Dec. 1987, 131(12), p.45-47.
Jacques, L.V., Hottle, T.D.
Towers, Power line supports, Icing.

42-3187
Polar Research Board annual report 1987 and future plans.
National Research Council. Polar Research Board, Washington, D.C., National Academy Press, 1988, 56p., Publications list p.50-56.
Research projects.
This annual report describes the Polar Research Board, its origin and objectives, its work and plans, and its principal activities and accomplishments during calendar year 1987. The Overview presents a concise summary of the various aspects of the Board's program and of its responsibilities as U.S. National Committee for the Scientific Committee on Antarctic Research (SCAR) of the International Council of Scientific Unions. This section serves as a guide to the more detailed information in the rest of the report. The second and third sections, "Arctic Activities" and "Antarctic Activities," describe the Board's activities in each region in detail. The fourth and final section outlines the work of the Board's subgroups, including the Board's *Strategy* studies and the activities of the Board's standing committees. At the end of the report are lists of those who participated in the work of the Board and its subgroups and of those who represented the United States in the activities of SCAR representing membership during 1987. There are also lists of publications by the Board, reports issued during the past year, and those in preparation.

42-3188
Climatic and CH4 cycle implications of glacial-interglacial CH4 change in the Vostok ice core.
Rayneaud, D., et al, *Nature*, June 16, 1988, 333(6174), p.655-657, 21 refs.
Ice cores, Ice composition, Climatic changes, Atmospheric composition.
The atmospheric CH4 increase from about 0.7 to 1.68 p.p.m.v. over about the past 300 years, which has been documented from analysis of air trapped in ice cores and from tropospheric measurements, is attributed to anthropogenic modifications of the CH4 cycle. The concern about this increase is due to the radiatively and chemically active nature of CH4. Strong evidence is presented from analysis of the Vostok ice core, that CH4 concentrations increased from 0.34 to 0.62 p.p.m.v. between the end of the penultimate ice age and the following interglacial, about 160-120 kyr BP. This CH4 change may be explained by considering the effect of the climatic change on the CH4 cycle. Its contribution (including chemical feedback) to the global climatic warming is estimated to be about 25% of that due to CO2. (Auth.)

42-3189
15,000-year isotopic record from Lake Zurich of deglaciation and climatic change in Switzerland.
Lister, G.S., *Quaternary research*, Mar. 1988, 29(2), p.129-141, 53 refs.
Glacier ablation, Climatic changes, Carbon isotopes, Air temperature, Switzerland—Zurich, Lake.

42-3190
Origin and consequences of cyclic ice rafting in the northeast Atlantic Ocean during the past 130,000 years.
Heinrich, H., *Quaternary research*, Mar. 1988, 29(2), p.142-152, 36 refs.
Cores, Bottom sediment, Ice rafting, Plankton.

42-3191
Systems approach to the problem of preventing and eliminating breakdowns caused by power line icing. [Sistemnyĭ podkhod k probleme predotvrashcheniia i likvidatsii gololednykh avariĭ v energosistemakh],
D'iakov, A.P., Moscow, Energoatomizdat, 1987, 161p., In Russian with abridged English table of contents enclosed. 57 refs.
Power line icing, Ice loads, Hoarfrost, Countermeasures, Electric heating, Power lines, Ice prevention.

42-3192
Experience in year-round operation of electric suction-dredges No.350-50L. [Opyt kruglogodovoĭ raboty elektricheskikh zemlesosov proekta No.250-50L],
Vasil'ev, V.P., *Ministerstvo rechnogo flota RSFSR. Ekspress-informatsiia. Rechnoĭ transport*, 1987, No.2 (1165), p.7-9, In Russian.
Earthwork, Ice prevention, Dredging, Electric heating, Construction equipment, Cold weather operation, Pipeline freezing, Countermeasures.

42-3193
Freezing of debris to the lower surface of fast ice and its wash-out to the sea. [O primerzanii oblomkov k nizhneĭ poverkhnosti pripaia i vynose ikh v more],
Stepanova, L.E., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Mar.-Apr. 1988, 120(2), p.169-172, In Russian. 7 refs.
Shores, Ice floes, Drift, Fast ice, Ice formation, Sea ice distribution, Ice rafting, Pressure ridges, Ice accretion, Sea ice, Ice breaking.

42-3194
Restoration of soil and vegetational covers on disturbed lands in the North. [Problemy vosstanovleniia pochvenno-rastitel'nogo pokrova na narushennykh zemliakh Severa],
Kapel'kina, L.P., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Mar.-Apr. 1988, 120(2), p.172-178, In Russian. 21 refs.
Cryogenic soils, Permafrost depth, Active layer, Soil erosion, Human factors, Revegetation.

42-3195
Modelling snowmelt-induced processes.
Morris, E.M., ed, *International Association of Hydrological Sciences. Publication*, 1986, No.155, 380p., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summaries. Refs. passim. For individual papers see 42-3196 through 42-3226.
Snowmelt, Runoff forecasting, Snow composition, Chemical analysis, Mathematical models, Snow impurities, Meltwater, Ions, Stream flow, Snow water equivalent.

42-3196
Exchanges of energy and mass associated with a melting snowpack.
Harding, R.J., *International Association of Hydrological Sciences. Publication*, 1986, No.155, p.3-16, 10 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snowmelt, Mass transfer, Heat transfer, Snow water equivalent, Heat flux, Snow evaporation, Snow surface temperature, Solar radiation, Meteorological factors.

42-3197
Three phase mixture model for melting snow.
Kelly, R.J., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.17-26, 10 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Morland, L.W., Morris, E.M.
Snow melting, Mass transfer, Snow physics, Water vapor, Phase transformations, Mathematical models.

42-3198
Physically-based model of the formation of snowmelt and rainfall-runoff.
Kuchment, L.S., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.27-36, 1 ref., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Demidov, V.N., Motovilov, IU.G.
Snowmelt, Runoff, Snow physics, Snow accumulation, Mathematical models, Rain, Seepage, Stream flow.

42-3199
Energy balance of a melting snow cover in different environments.
Kuusisto, E., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.37-45, 22 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snow melting, Heat balance, Heat transfer, Latent heat, Turbulent exchange, Solar radiation, Snowmelt, Finland.

42-3200
Model of snow cover formation and snowmelt processes.
Motovilov, IU.G., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.47-57, 7 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snowmelt, Snow physics, Heat transfer, Moisture transfer, Snow cover, Mathematical models, Hydrothermal processes.

42-3201
Development and applications of a two-dimensional flood flow model.
Popov, E.G., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.59-70, 8 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Trubikhin, N.A.
Floods, Snowmelt, Hydrography, Mountains, Rain, Mathematical models, Drainage, Precipitation (meteorology).

42-3202
Project SNOW: operational estimation of snow cover development in the mountains of the German Democratic Republic.
Rachner, M., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.71-82, Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary., 10 refs.
Matthäus, H.
Snow cover distribution, Snow water equivalent, Meltwater, Mountains, Snowmelt, Forecasting, Snow accumulation, Metamorphism (snow), Ablation.

42-3203
Modelling snowmelt-induced processes in a mountain river basin given standard hydrometeorological data.
Sosedko, M.N., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.83-91, Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary., 6 refs.
Kochelaba, E.I.
Snowmelt, Runoff, River basins, Mountains, Mathematical models, Rain, Seasonal variations, Forecasting.

42-3204
Changes in soil temperature caused by infiltration of snowmelt water.
Taniguchi, M., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.93-101, 14 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Kayane, I.
Soil temperature, Snowmelt, Meltwater, Heat transfer, Seepage, Soil water, Hydrology, Analysis (mathematics).

42-3205
Results of an intercomparison of models of snowmelt runoff.
World Meteorological Organization, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.103-112, Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary., 3 refs.
Runoff forecasting, Snowmelt, Stream flow, River basins, Analysis (mathematics), Models.

42-3206
Snowmelt simulation models in relation to space and time.
Bengtsson, L., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.115-123, 14 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snowmelt, Runoff, Mathematical models, Snow surface, Seepage, Stream flow.

42-3207
Simulation of snowmelt runoff in lowland and lower Alpine regions of Switzerland.
Braun, L.N., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.125-140, Refs. p.138-140., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Lang, H.
Runoff forecasting, Snowmelt, Models, Topographic effects, Meteorological factors, Stream flow.

42-3208
Improved utilization of maximum and minimum daily temperature in snowmelt modelling.
Ca'Zorzi, F., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.141-150, 7 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Dalla Fontana, G.
Snowmelt, Temperature effects, Air temperature, Snow accumulation, Models, Statistical analysis.

42-3209
Parametric modelling of daily and seasonal snowmelt using snowpack water equivalent as well as snow covered area.
Ferguson, R., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.151-161, 14 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snowmelt, Snow water equivalent, Runoff forecasting, Remote sensing, Forecasting, Seasonal variations, Models.

42-3210
Determination of snow water equivalent on the Canadian prairies using microwave radiometry.
Goodison, B.E., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.163-173, 12 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Rubinstein, I., Thirkettle, F.W., Langham, E.J.
Snow water equivalent, Microwaves, Radiometry, Runoff, Remote sensing, Snow cover distribution, Mapping, Aerial surveys.

42-3211
Snow accumulation, melting and runoff in the warm climate of Japan.
Ikebuchi, S., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.175-192, 6 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Takebayashi, S., Tomomura, M.
Snow accumulation, Snow melting, Runoff forecasting, Models, Snow depth, Snowfall, Rain, Stream flow, Snow density, Snow water equivalent.

42-3212
Estimation of basin-wide snow water equivalent using snow-covered area.
Koike, T., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.193-201, 6 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Takahashi, Y., Yoshino, S.
Snow water equivalent, Snow cover distribution, Mountains, Remote sensing, Water balance, Mathematical models.

42-3213
Forecasting snowmelt and snowmelt-rainfall runoff in lowland rivers.
Koren', V.I., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.203-213, 3 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Bel'chikov, V.A., Nechaeva, N.S.
Snowmelt, Runoff forecasting, Rain, River flow, Mathematical models, Temperature effects.

42-3214
Landsat registration for a snowmelt model of the Piave River basin.
Rossi, G., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.215-229, 7 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snowmelt, Remote sensing, Snow cover distribution, River basins, LANDSAT, Models, Snow depth.

42-3215
Modelling snowmelt runoff using environmental isotope and conventional methods.
Stichler, W., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.231-244, 25 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Herrmann, A., Rau, R.G.
Runoff, Snowmelt, Isotope analysis, Snow hydrology, Ground water, Floods, Mountains.

42-3216
Modelling and forecasting snowmelt floods for operational forecasting in Finland.
Vehviläinen, B., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.245-256, 7 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Flood forecasting, Snowmelt, Heat balance, Precipitation (meteorology), Mathematical models, Temperature effects, Degree days.

42-3217
Forecasting snowmelt runoff using TIROS/NOAA satellite data.
Zhang, S., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.257-268, 2 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Zeng, Q.
Runoff forecasting, Snowmelt, Stream flow, Remote sensing, Snow cover distribution, Air temperature, Precipitation (meteorology), Models.

42-3218
Accumulation and evolution of sulphate and nitrate levels in snow.
Babiaková, G., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.271-281, 6 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Bodiš, D.
Snow composition, Chemical analysis, Ions, Snowmelt, Runoff, Seasonal variations, Impurities, Stream flow.

42-3219
Chemical evolution of snow and meltwater.
Brimblecombe, P., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.283-295, 18 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snow composition, Meltwater, Water chemistry, Chemical analysis, Ions, Mathematical models.

42-3220
Investigations of snowmelt acidic shock potential in south central Ontario, Canada.
Goodison, B.E., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.297-309, Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary., 15 refs.
Louie, P.Y.T., Metcalfe, J.R.
Snowmelt, Meltwater, Chemical analysis, Models, Water chemistry, Rain, Ions.

42-3221
Modelling the effect of snowmelt on stream water quality.
Gregory, J., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.311-324, Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary., 7 refs.
Collins, D.N., Morris, E.M.
Snowmelt, Stream flow, Water chemistry, Snow cover distribution, Models, Geochemistry.

42-3222
Modelling the accumulation and effects of chemicals in snow.
Hornbeck, J.W., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.325-333, Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary., Refs. p.331-333.
Snow composition, Chemical analysis, Meltwater, Models, Water chemistry.

42-3223
Chemical behaviour of hydrophobic micropollutants during the melting of snow.
Simmleit, N., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.335-346, 28 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Herrmann, R., Thomas, W.
Snow melting, Snow composition, Snow impurities, Chemical composition, Meltwater, Pollution.

42-3224
Prediction of both runoff quality and quantity by the use of an integrated snowmelt model.
Stein, J., et al, *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.347-358, 23 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Jones, H.G., Roberge, J., Sochanska, W.
Runoff forecasting, Snowmelt, Models, Ions, Chemical analysis.

42-3225
Accumulation of organic and inorganic trace substances in the surface snow cover.
Thomas, W., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.359-371, 15 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Snow composition, Snow surface, Chemical analysis, Snowfall, Snowmelt, Snow impurities, Electrical resistivity.

42-3226
Mechanisms and spatial variability of erosion caused by meltwater in the USSR.
Tregubov, P.S., *International Association of Hydrological Sciences. Publication,* 1986, No.155, p.373-380, 5 refs., Proceedings of a symposium held during the 2nd Scientific Assembly of the International Association of Hydrological Sciences at Budapest, Hungary, July 1986. With French summary.
Meltwater, Soil erosion, Runoff, Topographic features, Climatic factors, Geology, Vegetation factors, Water balance.

42-3227
Direct observation of tetrahedral hydrogen jumps in ice Ih.
Fujara, F., et al, *Journal of chemical physics,* June 1, 1988, 88(11), p.6801-6809, 33 refs.
Wefing, S., Kuhs, W.F.
Ice crystal structure, Hydrogen bonds, Molecular structure, Doped ice, Temperature effects, Mathematical models.

42-3228
Freezing in the density functional approach: effect of third-order contributions.
Curtin, W.A., *Journal of chemical physics,* June 1, 1988, 88(11), p.7050-7058, 25 refs.
Freezing, Liquid solid interfaces, Density (mass/volume), Phase transformations, Analysis (mathematics), Theories.

42-3229
Microstructure of microemulsions by freeze fracture electron microscopy.
Jahn, W., et al, *Journal of physical chemistry,* Apr. 21, 1988, 92(8), p.2294-2301, 31 refs.
Strey, R.
Freezing, Microstructure, Electron microscopy, Experimentation.

42-3230
Design problems in gravel-bed rivers, Alaska.
Wang, B.-H., et al, Sediment transport in gravel-bed rivers. Edited by R.R. Thorne, J.C. Bathurst and R.D. Hey, New York, John Wiley & Sons, 1987, p.869-894, 28 refs.
Bredthauer, S.R., Marchegiani, E.A.
River ice, Sediment transport, Gravel, Glacier melting, Shore erosion, Stream flow, Permafrost, Seasonal variations, United States—Alaska.

42-3231
Use of natural resources in the economy of northeastern Europe. [Prirodopol'zovanie v sisteme khoziaĭstva Evropeĭskogo Severo-Vostoka],
Timonin, N.T., ed, Syktyvkar, Komi filial AN SSSR, 1987, 95p., In Russian. For selected papers see 42-3232 through 42-3236. Refs. passim.
Lazhentsev, V.N., ed.
Cryogenic soils, Permafrost distribution, Environmental protection, Forest soils, Solifluction, Paludification, Soil erosion, Petroleum transportation, Drilling, Revegetation, Forestry, Countermeasures, Subarctic landscapes, Subpolar regions.

42-3232
Rational use of natural resources and environmental protection in the Timan-Pechora petroleum province. [Problemy ratsional'nogo ispol'zovaniia prirodnykh resursov i okhrany okruzhaiushcheĭ sredy na territorii Timano-Pechorskoĭ neftegazonosnoĭ provintsii],
Obedkov, A.P., et al, Prirodopol'zovanie v sisteme khoziaĭstva Evropeĭskogo Severo-Vostoka (Use of natural resources in the economy of northeastern Europe) edited by N.I. Timonin and V.N. Lazhentsev, Syktyvkar, Komi filial AN SSSR, 1987, p.43-49, In Russian. 4 refs.
Solonin, A.V., Trunin, N.V.
Drilling, Permafrost distribution, Pollution, Paludification, Petroleum industry, Countermeasures, Subpolar regions, Petroleum transportation.

42-3233
Ecologic and geographic aspects of protecting the vegetational resources of the European Northeast. [Ekologo-geograficheskie aspekty okhrany rastitel'nykh resursov Evropeĭskogo Severo-Vostoka],
Nepomilueva, N.I., et al, Prirodopol'zovanie v sisteme khoziaĭstva Evropeĭskogo Severo-Vostoka (Use of natural resources in the economy of northeastern Europe) edited by N.I. Timonin and V.N. Lazhentsev, Syktyvkar, Komi filial AN SSSR, 1987, p.50-61, In Russian. 4 refs.
Martynenko, V.A., Bobkova, K.S.
Algae, Vegetation, Plant ecology, Climatic factors, Forestry, Environmental protection, Tundra, Biomass, Cryogenic soils, Subarctic landscapes, Swamps, Taiga, Meadows, Lakes.

42-3234
Regional aspects of forestry and reforestation in the Komi ASSR. [Regional'nyĭ aspekt lesopol'zovaniia i lesovosstanovleniia v Komi ASSR],
Larin, V.B., et al, Prirodopol'zovanie v sisteme khoziaĭstva Evropeĭskogo Severo-Vostoka (Use of natural resources in the economy of northeastern Europe) edited by N.I. Timonin and V.N. Lazhentsev, Syktyvkar, Komi filial AN SSSR, 1987, p.62-68, In Russian. 4 refs.
Kovalev, B.A., Kazitsin, V.P.
Forestry, Forest tundra, Taiga, Paludification, Transportation, Roads, Pavements, Forest soils, Cryogenic soils.

42-3235
Biological recultivation of disturbed lands and vegetation preservation in oil producing regions of the Komi ASSR. [O biologicheskoĭ rekul'tivatsii narushennykh zemel' v sviazi s okhranoĭ rastitel'nosti v neftegazodobyvaiushchikh raĭonakh Komi ASSR],
Akul'shina, N.P., Prirodopol'zovanie v sisteme khoziaĭstva Evropeĭskogo Severo-Vostoka (Use of natural resources in the economy of northeastern Europe) edited by N.I. Timonin and V.N. Lazhentsev, Syktyvkar, Komi filial AN SSSR, 1987, p.69-77, In Russian. 13 refs.
Ecosystems, Environmental protection, Pollution, Soil erosion, Countermeasures, Permafrost distribution, Cryogenic soils.

42-3236
Natural revegetation of lands disturbed by exploratory drilling in the northern Timan-Pechora Task Economic Complex. [Estestvennoe zarastanie narushennykh razvedochnym bureniem uchastkov v severnykh raĭonakh Timano-Pechorskogo TPK],
Gladkov, V.P., Prirodopol'zovanie v sisteme khoziaĭstva Evropeĭskogo Severo-Vostoka (Use of natural resources in the economy of northeastern Europe) edited by N.I. Timonin and V.N. Lazhentsev, Syktyvkar, Komi filial AN SSSR, 1987, p.78-85, In Russian. 7 refs.
Petroleum industry, Exploration, Drilling, Soil pollution, Soil erosion, Revegetation.

42-3237
Thermodynamic aspects of frozen ground mechanics. [Termodinamicheskie aspekty mekhaniki merzlykh gruntov],
Vialov, S.S., ed, Moscow, Nauka, 1988, 104p., In Russian. For individual papers see 42-3238 through 42-3247. Refs. passim.
Permafrost bases, Permafrost physics, Engineering geology, Foundations, Frozen ground thermodynamics, Earth dams, Hydrothermal processes, Stefan problem, Permafrost hydrology, Geocryology, Frozen fines, Unfrozen water content, Rheology, Mathematical models, Tests, Bibliographies.

42-3238
Thermodynamic basis of frozen ground mechanics. [Termodinamicheskie osnovy mekhaniki merzlykh gruntov],
Vialov, S.S., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.3-18, In Russian. 15 refs.
Permafrost physics, Frozen ground thermodynamics, Permafrost beneath structures, Foundations, Heat transfer, Engineering geology, Geocryology, Deformation.

42-3239
Some problems in frozen ground mechanics. [Nekotorye problemy mekhaniki merzlykh gruntov],
Zaretskiĭ, IU.K., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.18-29, In Russian. 16 refs.
Frozen ground thermodynamics, Dynamic loads, Frozen ground temperature, Hydrothermal processes, Soil freezing, Frost penetration, Ground thawing, Soil mechanics.

42-3240
Review of recent mathematical models of freezing moist ground. [Obzor sovremennykh matematicheskikh modeleĭ promerzaiushchikh vlazhnykh gruntov],
Golovko, M.D., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.30-45, In Russian. 45 refs.
Models, Soil freezing, Frost penetration, Heat transfer, Mass transfer, Frost heave, Bibliographies.

42-3241
Thermodynamic modeling of frost penetration into ground under load. [Termodinamicheskaia model' povedeniia promerzaiushchikh gruntov pod nagruzkoĭ],
Razbegin, V.N., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.46-55, In Russian. 20 refs.
Soil water migration, Phase transformations, Frost penetration, Unfrozen water content, Loads (forces), Frozen ground thermodynamics, Mathematical models, Soil freezing, Heat transfer, Mass transfer.

42-3242
Allowing for thermodynamic processes proceeding in permafrost bases when calculating structural settlement of single piles. [Uchet termodinamicheskikh protsessov v vechnomerzlykh osnovaniiakh pri raschete osadok odinochnykh svaĭ],
Slepak, M.E., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.56-63, In Russian. 7 refs.
Foundations, Piles, Permafrost bases, Rheology, Settlement (structural), Design.

42-3243
Studying structural processes and moisture transfer in frozen ground beneath a die under load. [Issledovanie strukturnykh protsessov i vlagoperenosa pri rabote merzlogo grunta pod nagruzhennym shtampom],
Maksimiak, R.V., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.63-70, In Russian. 3 refs.
Hydrothermal processes, Frozen fines, Clays, Loads (forces), Deformation, Fracturing, Ground ice, Rheology, Frozen ground.

42-3244
Conjugate heat-moisture transfer in the system "building-basement-seasonally active cooling structures". [Sopriazhennyĭ teplovlagoobmen v sisteme "sooruzhenie-osnovanie-sezonnodeĭstvuiushchie okhlazhdaiushchie ustroĭstva"],
Gokhman, M.R., et al, Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.70-77, In Russian. 9 refs.
Kutvitskaia, N.B.
Permafrost control, Permafrost beneath structures, Artificial freezing, Active layer, Freeze thaw cycles, Seasonal freeze thaw, Mathematical models, Foundations.

42-3245
Nonuniform problem of thermoelasticity, allowing for cryogenic ice formation. [Neodnorodnaia zadacha termouprugosti s uchetom kriogennogo l'doobrazovaniia],
Demin, I.I., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.78-85, In Russian. 13 refs.
Engineering geology, Geocryology, Earth dams, Embankments, Roadbeds, Earth fills, Foundations, Thermal stresses, Frost penetration, Heat transfer, Moisture transfer, Frost heave.

42-3246
Using the enthalpy method in solving problems of thermal conductivity in frozen ground. [Chislennoe reshenie zadach teploprovodnosti v merzlykh gruntakh ental'pĭnym metodom],
Plotnikov, A.A., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.86-94, In Russian. 8 refs.
Geocryology, Permafrost physics, Active layer, Freeze thaw cycles, Mathematical models, Phase transformations, Stefan problem, Engineering.

42-3247
Quantitative regularities governing the sustained strength of perennially frozen ground. [Kolichestvennye zakonomernosti dlitel'noĭ prochnosti vechnomerzlykh gruntov],
Konovalov, A.A., Termodinamicheskie aspekty mekhaniki merzlykh gruntov (Thermodynamic aspects of frozen ground mechanics) edited by S.S. Vialov, Moscow, Nauka, 1988, p.94-100, In Russian. 9 refs.
Permafrost physics, Frozen ground strength, Tests, Frozen fines, Organic soils, Peat, Analysis (mathematics).

42-3248
Numerical modeling of cloud modification. Review. [Chislennoe modelirovanie iskusstvennogo vozdeĭstviia na oblaka. Obzornaia informatsiia],
Lebedev, S.L., et al, *Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrometeorologicheskoĭ informatsii. Mirovol tsentr dannykh. Seriia Meteorologiia*, 1987, Vol.3, 23p., In Russian with English table of contents enclosed. 55 refs.
Sokolov, IU.V.
Weather modification, Cloud physics, Cloud dissipation, Cloud seeding, Artificial nucleation, Nucleating agents, Models, Ice formation.

42-3249
Searching for the right plow.
Baker, J.L., *American Public Works Association. The APWA reporter*, Feb. 1988, 55(2), p.10-11.
Snow removal, Equipment.

42-3250
Upfreezing process: experiments with a single clast.
Anderson, S.P., *Geological Society of America. Bulletin*, Apr. 1988, 100(4), p.609-621, 42 refs.
Freeze thaw tests, Frost heave.

42-3251
Climate and weather protection systems in settlement planning in the arctic regions of northern Norway.
Sterten, A.K., *Energy and buildings*, Mar. 1988, 11(1-3), p.23-32, 6 refs.
Arctic landscapes, Site surveys, Urban planning, Windbreaks.

42-3252
Settlement and housing design with special regard to local climatic conditions in cold and polar regions. Examples from northern Norway.
Börve, A.B., *Energy and buildings*, Mar. 1988, 11(1-3), p.33-39, 4 refs.
Arctic landscapes, Site surveys, Houses, Climate.

42-3253
Climatic approach to town planning in the Arctic.
Zrudlo, L.R., *Energy and buildings*, Mar. 1988, 11(1-3), p.41-63, 130 refs.
Arctic landscapes, Urban planning, Climate.

42-3254
Holographic interferometry applied at subfreezing temperatures: study of damage in concrete exposed to frost action.
Rastogi, P.K., et al, *Optical engineering*, Feb. 1988, 27(2), p.172-178, 12 refs.
Jacquot, P., Pflug, L.
Concrete freezing, Frost action, Frost resistance, Freeze thaw tests, Holography.

42-3255
Sea surface studies: a global view.
Devoy, R.J.N., ed, London, Croom Helm, 1987, 649p., Refs. passim. For selected papers see 42-3256 through 42-3260, or I-37526, J-37524 and J-37525.
DLC GC89.S44
Paleoclimatology, Sea level, Ice melting.
This book attempts an interdisciplinary exploration and major review of the state of the knowledge of the causes, patterns and proble ns of sea level changes, through the views of researchers studyi ig the nature and applications of sea level change and its consequences for the coastline. Specifically, deglaciation of Antarctica and the effects on global sea level is considered in three of the articles presented in this volume.

42-3256
Mechanisms of relative sea-level change and the geophysical response to ice-water loading.
Peltier, W.R., Sea surface studies: a global view. Edited by R.J.N. Devoy, London, Croom Helm, 1987, p.57-94., Refs. p.91-94.
DLC GC89.S44
Glacial geology, Sea level, Ice loads, Isostasy, Isotope analysis, Mathematical models, Oxygen isotopes.

42-3257
Glaciation and sea level: a case study.
Andrews, J.T., Sea surface studies: a global view. Edited by R.J.N. Devoy, London, Croom Helm, 1987, p.95-126, Refs. p.121-126.
DLC GC89.S44
Glaciation, Sea level, Ice sheets, Pleistocene, Models, Paleoclimatology.

42-3258
Quaternary sea-level changes: Southern Hemisphere data.
Pillans, B., Sea surface studies: a global view. Edited by R.J.N. Devoy, London, Croom Helm, 1987, p.264-293, Refs. p.288-293.
DLC GC89.S44
Ice volume, Sea level, Glaciation, Ice melting.
This chapter examines the evidence for sea level change in the Southern Hemisphere from 3 sources: on land littoral deposits, continental shelf sediments, and deep sea cores. Integration of the three is attempted on 3 timescales: the last 160,000 years, 0-750,000 years, and 0-2 million years.

42-3259
Holocene sea-level changes in Australasia and the southern Pacific.
Hopley, D., Sea surface studies: a global view. Edited by R.J.N. Devoy, London, Croom Helm, 1987, p.375-408, Refs. p.401-408.
DLC GC89.S44
Ice volume, Sea level, Glaciation, Isostasy.
A review of extensive literature on the relationships between land and sea in the Holocene is presented. Data analyzed cover the tectonic and isostatic setting and its effect on the Holocene sea level record; factors involved in the interpretation of Pacific sea level history; and Holocene sea level history in the southern Pacific and Australasia. The significance of isostatic rebound from the deglaciation of Antarctica is discussed.

42-3260
Greenhouse effect, rising sea level and society's response.
Titus, J.G., Sea surface studies: a global view. Edited by R.J.N. Devoy, London, Croom Helm, 1987, p.499-528, Refs. p.525-528.
DLC GC89.S44
Sea level, Atmospheric composition, Climatic changes, Ice volume, Ice melting, Paleoclimatology.
This chapter examines the basis for expecting a global warming and accelerating rise in sea level, the likely impacts, possible responses and the time constraints society faces. The possibility of the West Antarctic Ice Sheet's disintegration is discussed. A vast literature on the subject is reviewed. Additional research into the climate change-sea level linkage and the repercussion on shoreline position is advocated.

42-3261
Aero-climatological characteristics of the Moscow-Molodezhnaya route and weather conditions at Molodezhnaya and Novolazarevskaya stations in summer. [Aviatsionno-klimaticheskie kharakteristiki trassy Moskva-Antarktida i antarkticheskih VPP Molodezhnaia i Novolazarevskaia v letniĭ period],
Bogatkin, O.G., et al, Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.1), Leningrad, Gidrometeoizdat, 1986, p.58-65, In Russian. 11 refs.
Pavlova, L.V., Tsigel'nitskiĭ, I.I., Perskiĭ, V.A.
Snow, Navigation, Weather observations, Antarctica—Molodezhnaya Station, Antarctica—Novolazarevskaya Station.
Studies of atmospheric circulation and spatial and temporal distribution of climatological characteristics up to 12,000 m altitude, carried out in the 0-50E longitude sector with the purpose of establishing the most favorable time, cruising altitude and route for flights between the Maputu airport and Molodezhnaya Station, are reviewed. Also discussed, and tabulated, are results of summer weather observations at Molodezhnaya and Novolazarevskaya stations, with the warning that fog and snowdrifts endanger aircraft operations at both stations at that time of year.

42-3262
Climatic factors of snow and ice resource formation in Antarctica. [Klimaticheskie faktory formirovaniia snezhno-ledovykh resursov Antarktidy],
Briazgin, N.N., et al, Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.1), Leningrad, Gidrometeoizdat, 1986, p.70-78, In Russian. 4 refs.
Marshunova, M.D., Petrov, L.S.
Climatic factors, Precipitation (meteorology), Air temperature.
In a study of the process of snow and ice formation in Antarctica, and its interrelationship with climate, charts, tables and discussion of monthly atmospheric precipitation, surface radiation balance, and the thermal regime of the atmospheric surface layer in south polar regions are presented.

42-3263
Paleoclimatological interpretation of the vertical structure of antarctic ice cover. [Paleoklimaticheskaia interpretatsiia vertikal'noĭ struktury lednikovogo pokrova Antarktidy],
Petrov, V.N., et al, Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.2, Leningrad, Gidrometeoizdat, 1986, p.4-11, In Russian. 17 refs.
Barkov, N.I., Lipenkov, V.IA.
Paleoclimatology, Ice cores, Ice composition, Oxygen isotopes, Antarctica—Vostok Station.
Oxygen isotope composition, ice crystal size, concentrations of soluble enclosures, and content of microparticles and air bubbles in ice, studied in an ice core from a 1400 m deep hole at Vostok Station, are discussed. Data for the last 120 thousand y., covering air temperature variations, atmospheric dust content and ice cover thickness in Central Antarctica, are presented. Intensity variations of atmospheric circulation in the Southern Hemisphere for the same period are also extracted from the data.

42-3264
Variability of antarctic ice shelves. [Izmenchivost' ledianykh beregov Antarktidy],
Dubrovin, L.I., Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.2, Leningrad, Gidrometeoizdat, 1986, p.11-15, In Russian. 2 refs.
Ice volume, Ice shelves, Heat transfer.
Based on analysis of cartographic data for the last 60-70 years, and results from aerial topographic surveys carried out at Mirnyy and Molodezhnaya stations, the variability of antarctic ice shelves, and their receding tendency, are evaluated. The practical value of the study of ice shelf dynamics is underlined; the climatic resources of the coastal areas and the heat exchange processes between the ice sheet, the coastal waters and the atmosphere, are established.

42-3265
Seasonal variations of antarctic ice volume and their role in the heat balance of the southern ocean. [Sezonnye izmeneniia kolichestva antarkticheskikh l'dov i ikh rol' v teplovom balanse IUzhnogo okeana],
Lebedev, A.A., Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.2, Leningrad, Gidrometeoizdat, 1986, p.15-24, In Russian. 16 refs.
Ice heat flux, Heat balance, Icebergs, Ice volume.
On the basis of published data from field observations, long-period seasonal variations of sea ice and iceberg volume in the Antarctic are investigated. The following is found: 70-80% of the seasonal variations of sea ice volume correspond to surface and volume variations of one-year ice; icebergs significantly increase the overall amount of ice from other sources. For the first time, the heat of phase changes of sea ice is taken into account in studying the heat balance of the southern ocean. Its seasonal characteristics are discussed.

42-3266
Features of snow transport in Antarctica. [Zakonomernosti snegoperenosa v Antarktide],
Briazgin, N.N., et al, Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.2, Leningrad, Gidrometeoizdat, 1986, p.24-31, In Russian. 23 refs.
Voskresenskiĭ, A.I.
Snow cover distribution, Snow accumulation, Snowdrifts, Blowing snow.
From experimental measurements of horizontal transport of snow, carried out at Mirnyy Station over a 3-year period, features of the distribution of transport at different altitude and different wind speed are established. The level of snow cover balance is estimated; mean values of continental snow drifts are obtained.

42-3267
Properties of climate and of the recent glaciation of King George (Waterloo) Island. [Osobennosti klimata i sovremennogo oledeneniia o-va King-Dzhordzh (Vaterloo)],
Briazgin, N.N., et al, Vsesoiuznyĭ simpozium "Meteorologicheskie issledovaniia v Antarktike," 2nd Leningrad, Oct. 19-22, 1981. Sbornik dokladov (All-Union Symposium "Meteorological investigations in the Antarctic", 2nd, Leningrad, Oct. 19-22, 1981. Proceedings). Vol.2, Leningrad, Gidrometeoizdat, 1986, p.31-36, In Russian. 7 refs.
Govorukha, L.S.
Glaciation, Climatic factors, Antarctica—King George Island.
Tabulated data on seasonal mean air temperature, wind speed, relative humidity, cloudiness, precipitation, snowfall, snow accumulation, and snow and ice ablation, are analyzed. Results show favorable climatic conditions for the support of recent glaciation on King George I.

42-3268
Proceedings.
Symposium on Ice-Core Analysis. Bern, Switzerland, Mar. 30-Apr. 3, 1987, *Annals of glaciology*, 1988, Vol.10, 232p., Refs. passim. For individual papers see 42-3269-3308 or F-37587-37607.
Ice composition, Ice cores, Snow composition, Chemical analysis, Isotope analysis, Climatic changes, Impurities, Paleoclimatology, Meetings, Ions, Oxygen isotopes.
This is a collection of papers presented at the 1987 Symposium on Ice Core Analysis, held in Bern, Switzerland, from Mar. 30 to Apr. 3. The symposium attracted 77 participants, from 14 countries. Sixty-five papers were presented, of which 21 deal with Antarctica, with particular stress on environmental changes, from pre-industrial atmospheric conditions to conditions at the end of this century.

42-3269
Ice-core analysis at Site A, Greenland: preliminary results.
Alley, R.B., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.1-4, 14 refs.
Koci, B.R.
Ice cores, Drill core analysis, Paleoclimatology, Ice crystal growth, Ice storms, Firn, Ice temperature, Stratigraphy, Climatic changes, Greenland.

42-3270
Atmospheric lead in antarctic ice during the last climatic cycle.
Boutron, C.F., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.5-9, 25 refs.
Ice composition, Chemical analysis, Climatic changes, Ice cores, Isotope analysis, Ice spectroscopy, Paleoclimatology, Glaciation, Volcanoes.
Concentrations of lead (Pb) have been measured by the ultra-clean isotope dilution mass spectrometry technique in various sections of Dome C and Vostok deep ice cores, whose ages range from 3.85 to 155 ka B.P., in order to assess the natural, pre-human, sources of this toxic heavy metal in the global troposphere. Pb concentrations were very low, as low as about 0.3 pg Pb/g during the last interglacial and part of the last ice age. On the other hand, they were quite high, up to about 40 pg Pb/g, during the Last Glacial Maximum and at the end of the penultimate ice age. Wind-blown dust from crustal rock and soil appears to be the main natural source of Pb in the global troposphere. Pb contribution from volcanoes is significant during periods of low Pb only. Contribution from the oceans is insignificant. (Auth.)

42-3271
Glaciological investigations in the Crête area, central Greenland: a search for a new deep-drilling site.
Clausen, H.B., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.10-15, 21 refs.
Gundestrup, N.S., Johnsen, S.J.
Ice cores, Drill core analysis, Boreholes, Ice density, Ice temperature, Ice growth, Oxygen isotopes, Paleoclimatology, Greenland.

42-3272
Laki and Tambora eruptions as revealed in Greenland ice cores from 11 locations.
Clausen, H.B., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.16-22, 12 refs.
Hammer, C.U.
Ice cores, Drill core analysis, Volcanoes, Ice composition, Chemical analysis, Fallout, Snow composition, Radioactive wastes, Antarctica—Byrd Station, Antarctica—Ross Ice Shelf, Antarctica—Amundsen-Scott Station, Greenland.
Major volcanic eruptions deposit large amounts of strong acids in polar ice. Two such volcanic eruptions are Laki, A.D. 1783, at high latitude (64N), and Tambora, A.D. 1815, close to the Equator (8S). The acid ice layers from these eruptions are easily reached by shallow drilling, and the acidity of the ice cores obtained has been determined by a solid electrical conductivity method. Atmospheric thermonuclear-bomb tests ejected radioactive debris into the atmosphere. Radioactive debris was deposited in polar snow, and can be detected by specific total *beta* activity measurements. The amount of (90)Sr and (137)Cs ejected into the atmosphere is known. We assumed a similar global distribution pattern of bomb-produced total *beta* activity and strong acids from violent volcanic activity, and were able to calculate that both major volcanic events produced some 300 million tons of sulphuric acid. This is in agreement with other estimates of the Tambora eruption, which are based on studies of ice cores from Antarctica. (Auth. mod.)

42-3273
Analyses of two ice cores drilled at the ice-sheet margin in West Greenland.
Clausen, H.B., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.23-27, 12 refs.
Stauffer, B.
Ice cores, Drill core analysis, Ice edge, Paleoclimatology, Ice sheets, Glacier beds, Oxygen isotopes, Profiles, Ice temperature, Rheology, Greenland.

42-3274
Atmospheric trace-gas variations as revealed by air trapped in an ice core from Law Dome, Antarctica.
Etheridge, D.M., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.28-33, 26 refs.
Pearman, G.I., De Silva, F.
Ice cores, Ice composition, Atmospheric composition, Air entrainment, Isotope analysis, Impurities, Antarctica—Law Dome.
A technique for extracting and analyzing large air samples from bubbles occluded in an ice core is discussed. The concentrations of atmospheric carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) over the past 450 years have been revealed. Measurements of a chlorofluorocarbon (CCl_2F_2) in the ice-core air were used to check core quality and the air-occlusion process. The ice core, designated BHD, was thermally drilled from the summit of Law Dome. Ice dating was achieved by counting annual cycles of oxygen-isotope ratio and d.c. conductivity, and air dating was deduced from the density profile. The results show the pre-industrial concentrations of the gases to be 288 ppm volume for CO_2, 800 ppb volume for CH_4 and 285 ppb volume for N_2O. (Auth. mod.)

42-3275
Effects of wind on *delta* (18O) and accumulation give an inferred record of seasonal *delta* amplitude from the Agassiz Ice Cap, Ellesmere Island, Canada.
Fisher, D.A., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.34-37, 11 refs.
Koerner, R.M.
Ice cores, Wind factors, Drill core analysis, Oxygen isotopes, Snow accumulation, Ice growth, Temperature effects, Ice cover thickness, Seasonal variations, Stratigraphy, Canada—Northwest Territories—Ellesmere Island.

42-3276
Microparticle concentration and electrical conductivity of a 700 m ice core from Mizuho Station, Antarctica.
Fujii, Y., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.38-42, 13 refs.
Watanabe, O.
Ice composition, Ice cores, Ice electrical properties, Electrical resistivity, Impurities, Microanalysis, Paleoclimatology, Volcanoes, Particle size distribution, Antarctica—Mizuho Station.
Preliminary results of analyses on microparticle concentration and electrical conductivity of a 700.56 m ice core from Mizuho Station are given. Concentration of microparticles coarser than 0.63 micron in diameter increases more than twofold at the

240-440 m depth interval compared with that below 440 m in depth. The higher particle concentration is well associated with higher electrical conductivity and lower delta O-18. Periods of high particle concentration are estimated bo be 3,000-6,000 years B.P. A visible volcanic dirt band was found at 500.7 m below the surface. This dirt band may be isochronous with the shallowest ash band of the Byrd Station core, found at 799 m depth. The present study indicates that large-scale environmental changes possibly occurred in the Southern Hemisphere in the middle of the Holocene. (Auth.)

42-3277

Investigation of the O-18 content of a 100 m ice core from the Ronne Ice Shelf, Antarctica.

Graf, W., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.43-47, 7 refs.

Reinwarth, O., Moser, H., Stichler, W.

Ice composition, Oxygen isotopes, Ice cores, Stratigraphy, Seasonal variations, Snow accumulation, Models, Antarctica—Ronne Ice Shelf.

A 100 m ice core from the Ronne Ice Shelf, drilled during the 1983-84 field season, was dated by isotopic stratigraphy, using the well-known seasonal variation in the 18-O content in firn and ice; the layers at a depth of 89 m are probably 400 years old. Layer thicknesses deduced from the 18-O profile indicate short-term variations of the snow-accumulation rate over the last 400 years. The area of deposition of the material recovered with the core is estimated by a two-dimensional flow model and by the 18-O content of the core, which decreases from -27 per mill in the upper part of the core to -32.0 per mill at 89 m depth. (Auth.)

42-3278

Signal from the Chernobyl accident in high-altitude firn areas of the Swiss Alps.

Haeberli, W., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.48-51, 11 refs.

Firn, Fallout, Radioactivity, Mountains, Snow composition, Chemical analysis, Snow impurities, Pollution, USSR—Chernobyl, Switzerland—Alps.

42-3279

Preliminary results of analyses of 700 m ice cores retrieved at Mizuho Station, Antarctica.

Higashi, A., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.52-56, 16 refs.

Ice physics, Ice cores, Ice composition, Ice density, Grain size, Air entrainment, Paleoclimatology, Electrical resistivity, Impurities, Antarctica—Mizuho Station.

Preliminary results of analyses of 700 m ice cores retrieved from Mizuho Station in 1983 and 1984 are presented. Physical properties, density, grain-size and shape, and total gas content, as well as fabrics, microparticle concentration, electrical conductivity, and stable-isotope concentration delta O-18 were measured. In spite of inaccuracy in measuring both density and total gas content in the ice, due to interlocking cracks in cores, several attempts were made to correct the data. The coincidence between the incremental peaks in the depth profile of the microparticle concentration, as well as in the electrical conductivity and the warm trend indicated by the delta O-18 profile is discussed. The shape of the delta O-18 profile is characterized by two inflection points and is compared with results obtained from the Byrd Station, Dome C and Vostok cores. From this comparison, it is tentatively concluded that the bottom of the Mizuho core may be an age of the order of 10 ka B.P. (Auth. mod.)

42-3280

Trace-acid ion content of shallow snow and ice cores from mountain sites in western Canada.

Holdsworth, G., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.57-62, 19 refs.

Krouse, H.R., Peake, E.

Snow composition, Ice cores, Ice composition, Ions, Chemical analysis, Mountain glaciers, Firn, Canada.

42-3281

Salinity and isotope analysis of some multi-year landfast sea-ice cores, northern Ellesmere Island, Canada.

Jeffries, M.O., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.63-67, 22 refs.

Krouse, H.R.

Ice composition, Fast ice, Ice salinity, Ice cores, Isotope analysis, Seasonal variations, Ice growth, Canada—Northwest Territories—Ellesmere Island.

42-3282

Water circulation and ice accretion beneath Ward Hunt Ice Shelf (northern Ellesmere Island, Canada), deduced from salinity and isotope analysis of ice cores.

Jeffries, M.O., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.68-72, 17 refs.

Ice structure, Ice accretion, Ocean currents, Ice salinity, Ice electrical properties, Isotope analysis, Ice density, Ice cores, Ice shelves, Canada—Northwest Territories—Ellesmere Island.

42-3283

Nitrous oxide: trends and global mass balance over the last 3,000 years.

Khalil, M.A.K., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.73-79, 20 refs.

Rasmussen, R.A.

Ice composition, Ice cores, Chemical analysis, Glacier mass balance, Atmospheric composition, Paleoclimatology, Electrical resistivity.

Ice cores from both northern and southern polar regions were analyzed to determine the concentrations of nitrous oxide in the pre-industrial and ancient atmospheres from about 150 years to 3,000 years B.P. It is found that the pre-industrial concentration of nitrous oxide remained constant over the period studied and that the average atmospheric concentration was 285 volume (90% confidence limits), representing about 2,100 Tg N2O in the atmosphere, whereas the average concentration in 1984 was about 307 ppb volume or 2,260 Tg. This is a change of 22 ppb volume (160 Tg), or about 8%, between pre-industrial and present times. The rate of change is between 0.7 and 0.9 ppb volume/year or 5 and 6.5 Tg/year, which is a slow increase of about 0.3% per year. The changes observed are attributed to the increasing use of fossil fuels, particularly coal and oil, and, to a lesser extent, use of nitrogen fertilizers in recent years. In the next 50 years, nitrous oxide levels are expected to reach 360-390 ppb volume, or about 16-25% more than present. (Auth. mod.)

42-3284

Thousand year glaciochemical study at the South Pole.

Kirchner, S., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.80-84, 30 refs.

Delmas, R.J.

Ice composition, Chemical analysis, Impurities, Ice cores, Firn, Glaciation, Ions, Antarctica—Amundsen-Scott Station.

Major soluble chemical impurities have been measured along a 130 m firn core from the Amundsen-Scott Station in order to assess Southern Hemisphere environmental variability over the last millennium. Particular attention is given to the possible impact of the Little Ice Age, a well-known climatic disturbance which occurred in the Northern Hemisphere between about A.D. 1500 and 1900. No definite trend is detected which could be linked to the Little Ice Age disturbance. (Auth. mod.)

42-3285

Pollen analysis and discussion of time-scales in Canadian ice cores.

Koerner, R.M., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.85-91, 29 refs.

Bourgeois, J.C., Fisher, D.A.

Ice composition, Pollen, Ice cores, Oxygen isotopes, Palynology, Canada.

42-3286

Computer-controlled system for ice-fabric analysis on a Rigsby stage.

Lange, M.A., *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.92-94, 5 refs.

Ice crystal structure, Ice crystal optics, Sea ice, Ice cores, Measuring instruments, Computer applications.

42-3287

Basic properties of antarctic sea ice as revealed by textural analysis of ice cores.

Lange, M.A., *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.95-101, 8 refs.

Ice structure, Sea ice, Ice cores, Microstructure, Ice physics, Chemical properties, Drill core analysis, Antarctica—Weddell Sea.

A proper characterization of sea-ice micro-structure is essential for an adequate classification of ice cores, an understanding of the growth processes of the sampled floe, and the identification of possible relationships between ice texture, and the physical, chemical and biological properties of sea ice. Investigations on ice cores which were obtained during 3 recent antarctic expeditions (1983-85) in coastal waters of the eastern and southern Weddell Sea are reported. Major results of this study can be summarized as follows: in addition to the common ice classes, another sea-ice type, platelet ice, is identified; it is apparently unique to the coastal waters of Antarctica, near the ice-shelf edge; and different physical, chemical and biological sea-ice properties vary systematically. (Auth. mod.)

42-3288

Inter-hemispheric volcanic time-marker in ice cores from Greenland and Antarctica.

Langway, C.C., Jr., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.102-108, 31 refs.

Clausen, H.B., Hammer, C.U.

Ice composition, Ice cores, Chemical analysis, Volcanoes, Paleoclimatology.

A strong volcanic-acid signal is clearly registered, using an acidity-measuring technique, in the A.D. 1259 ice layer in 4 different Greenland ice cores. This signal is similar in amplitude to the Laki (Iceland) A.D. 1783 volcanic event as recorded in the central and south Greenland ice cores. Measurement of ice layers from corresponding age levels in Antarctic ice cores (Byrd Station, South Poole and J-9 on the Ross Ice Shelf) provides similar strong acid signals. There is no historical record of a significant volcanic eruption for the period around A.D. 1260 in the Northern Hemisphere. Subsequent chemical analyses of all A.D. 1259 ice layers show similar compositions. It is suggested that the A.D. 1259 signals registered in both Greenland and Antarctica were caused by the same volcanic disturbance and that its epicenter was located at the Earth's equatorial zone, which enabled global distribution of the acid gases. These results indicate that inter-hemispheric dating of ice sheets is possible by the chemical identification of major eruptive volcanic events in the equatorial zone. (Auth.)

42-3289

Crystal size and orientation patterns in the Wisconsin-age ice from Dye 3, Greenland.

Langway, C.C., Jr., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.109-115, 16 refs.

Shoji, H., Azuma, N.

Ice crystal size, Ice crystal structure, Ice cores, Ice physics, Glaciers, Paleoclimatology, Ultrasonic tests, Wave propagation, Velocity, Greenland.

42-3290

Soluble impurities in four antarctic ice cores over the last 30,000 years.

Legrand, M.R., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.116-120, 27 refs.

Delmas, R.J.

Ice composition, Ice cores, Impurities, Chemical analysis, Paleoclimatology, Atmospheric composition, Aerosols, Ions, Antarctica—Dome C.

The chemical composition of soluble impurities along the Dome C ice core covering approximately the last 30,000 years is reported and interpreted in terms of atmospheric contributions. Terrestrial and sea-salt inputs are known to have been much higher during the last Glacial Maximum (LGM) than during the Holocene period. For this reason, the gas-derived compounds which dominate the chemistry of present-day snow are minor components in LGM snow. The exact calculation of each of the various contributions has been made possible by the determination of all major ions in the samples. Three additional deep ice cores from other antarctic areas have also been analyzed, but in a less comprehensive manner than the Dome C core. The differences observed at the four study sites increase the general understanding of the past atmospheric chemistry of the Southern Hemisphere. (Auth.)

42-3291

Anions and cations in ice cores from Dolleman Island and the Palmer Land Plateau, Antarctic Peninsula.

Mulvaney, R., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.121-125, 11 refs.

Peel, D.A.

Ice composition, Ice cores, Ions, Chemical analysis, Oxygen isotopes, Snowfall, Antarctica—Antarctic Peninsula.

High-resolution anion profiles of Cl anion, NO3 anion and SO4-2 anion are presented for two cores from the Antarctic Peninsula. A 47.2 m core, from a site on the Palmer Land plateau, spans the period 1942-80, and a 10.5 m core from Dolleman I., on the east coast of the peninsula, spans the period 1973-85. The seasonal pattern of deposition of these species has been determined by reference to the oxygen-isotope composition. Averaged over 38 years, the annual cycle of SO4-2 anion at Gomez shows a seasonal maximum during the austral summer, and minimum during the winter, whereas the Cl anion cycle is more complex and may show the influence of equinoctial storms. The Dolleman core is significantly influenced by the proximity of the Weddell Sea, with a mean Cl anion concentration five times greater than in the core from the plateau, and it shows a clear seasonal maximum in late-summer snowfall. There is no significant long-term trend in the 38 years' data from the plateau site, suggesting that global pollution does not contribute significantly to the anion budget. (Auth. mod.)

42-3292
Stratigraphic record of an ice core from the Yamato Meteorite Ice Field, Antarctica.
Nakawo, M., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.126-129, 21 refs.
Nagoshi, M., Mae, S.
Ice structure, Stratigraphy, Ice cores, Ice density, Oxygen isotopes, Electrical resistivity, Air entrainment, Climatic changes, Pleistocene.
Measurements of density, total gas content, delta O-18, and electrical conductivity were carried out along a core 100 m long. A profile of *in-situ* bubble pressure was obtained from the data on density and total gas content, taking into account the volume relaxation of the core in the period between core recovery and density determination. The bubble pressure was appreciably higher than the overburden pressure at corresponding depths. It was considered that the pressure difference was caused by the continuous lifting of the ice, since ice flow was obstructed in the blue-ice area. From the profile of the pressure difference, the vertical distribution of the upward velocity was calculated, which provided a time-scale for the core. It was found that the 100 m long core represented a record of about 10,000-100,000 a. Since the surface ice was considered to represent a few tens of thousand years B.P., the data obtained on total gas content, delta O-18, and electrical conductivity would describe the variations in the climate as well as in the ice sheet during the last glacial period. (Auth.)

42-3293
Stable-isotope/air-temperature relationships in ice cores from Dolleman Island and the Palmer Land Plateau, Antarctic Peninsula.
Peel, D.A., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.130-136, 14 refs.
Mulvaney, R., Davison, B.M.
Ice cores, Isotope analysis, Air temperature, Climatic changes, Oxygen isotopes, Temperature gradients, Antarctica—Antarctic Peninsula.
Whilst stable-isotope analysis of ice cores yields the best quantitative evidence for past climate, there remains considerable uncertainty about the detailed relationship between the isotopic composition and air temperature. Analysis of two ice cores from the Antarctic Peninsula has shown that an oxygen-isotope/temperature relationship exists at a resolution of inter-annual variations during the period 1938-86. All the major regional temperature anomalies, known from climatic records at several stations, are visible in the isotope profiles, including the overall temperature increase between 1960 and 1980. An isotope-temperature gradient of 0.5-0.6 per mill/deg C is indicated for the climatic interpretation of isotopic fluctuations in ice cores recovered from the region. This gradient is considerably smaller than that obtained from a comparison of spatial variations in the mean annual parameters. The discrepancy appears to be due mainly to an inherent biasing in the isotope profiles, which record temperature only during periods of snowfall. The effect is particularly severe in the winter months and can be expected in other areas of Antarctica where a significant part of the snow accumulation is cyclonic. (Auth. mod.)

42-3294
Mechanical behavior of ice along the 2040 m Vostok core, Antarctica.
Pimienta, P., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.137-140, 21 refs.
Duval, P., Lipenkov, V.IA.
Ice mechanics, Ice cores, Compressive properties, Shear strain, Rheology, Viscosity, Tests, Impurities, Antarctica—Vostok Station.
Uniaxial and biaxial compression tests were carried out on ice samples from the 2,040 m Vostok ice core. It is shown that the ice viscosity does not significantly change with depth. As a result the high impurity content in glacial ice does not seem to influence the mechanical behavior of the Vostok ice core. The measured enhancement factor, smaller than 1, is caused by the particular orientation of c-axes in this polar ice. It is deduced that the viscosity of Vostok ice for horizontal shear is high compared with that of other ice cores. (Auth.)

42-3295
Air mixing in firn and the age of the air at pore close-off.
Schwander, J., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.141-145, 11 refs.
Stauffer, B., Sigg, A.
Firn, Bubbles, Ice surface, Interfaces, Glacier ice, Diffusion, Antarctica—Siple Station, Antarctica—Amundsen-Scott Station.
The air trapped in the bubbles of natural ice is not the same age as the surrounding ice. This is due to the fact that the air is enclosed in isolated bubbles only at the depth of the firn-ice transition. Within the overlying porous firn layer the air is able to mix and to exchange to a certain degree with the atmosphere. The age difference between ice and air is given by the age of the ice at pore close-off, less the mixing delay. Also, there is an age distribution due to diffusive smoothing and due to the gradual enclosure of the air at the firn-ice transition. Knowledge of this age relation is necessary for the interpretation of climatic parameters measured on ice cores. This work concentrates on the effect of diffusive mixing. Measurements of the diffusivity of CO2 and O2 (in N2) in firn samples from Siple Station, are reported. It is shown that the dominant mixing process is molecular diffusion. The diffusion coefficient depends approximately linearly on the porosity. A one-dimensional diffusion model has been used to calculate the air mixing in firn at Siple Station, at the South Pole, and at Station Crête (Greenland). An exchange time of between 10 and 50 years is obtained. (Auth.)

42-3296
Flow-law parameters of the Dye 3, Greenland, deep ice core.
Shoji, H., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.146-150, 16 refs.
Langway, C.C., Jr.
Ice deformation, Compressive properties, Ice cores, Ice composition, Stress strain diagrams, Ions, Ice crystal structure, Greenland.

42-3297
Stable-isotope ratios and concentration of CO2 in air from polar ice cores.
Siegenthaler, U., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.151-156, 25 refs.
Ice composition, Air entrainment, Ice cores, Isotope analysis, Carbon dioxide, Oxygen isotopes.
Analyses of air trapped in an ice core from the South Pole indicate that the CO2 concentration may have increased by about 10 ppm and that the C-13/C-12 ratio decreased slightly in the thirteenth century. These changes, if really of atmospheric origin, must be due to a significant input into the atmosphere of CO2, either of biogenic or of oceanic origin. O-18/O-16 ratios in CO2 from different ice cores are much lower than those which have been observed in atmospheric carbon dioxide. A possible explanation is that the CO2 has equilibrated isotopically with the ice. Equilibrium isotope-fractionation factors were calculated between ice and carbon dioxide and the observed O-18/O-16 ratios of CO2 were indeed found to be near isotopic equilibrium with the ice. This indicates that an exchange of oxygen atoms probably occurs between ice and included CO2. (Auth.)

42-3298
Seasonal variations in hydrogen peroxide in polar ice cores.
Sigg, A., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.157-162, 16 refs.
Neftel, A.
Ice composition, Ice cores, Chemical analysis, Isotope analysis, Firn, Impurities, Seasonal variations, Snow composition, Ice dating, Stratification, Antarctica—Siple Station.
Hydrogen peroxide is present in polar snow and ice in remarkably high concentrations. With values up to 300 ppb, H2O2 is one of the most concentrated impurities in polar ice. A continuous H2O2 firn record from Siple Station is presented; it covers the last 83 years with a resolution of 10-20 samples per year. A very strong seasonality is present in this record. This seasonality is also observed in a Greenland ice core from Dye 3. The maximum concentrations correspond to summer snow layers and can exceed winter snow concentrations by a factor of 10. This property makes H2O2 a useful tracer for dating suitable cores by counting annual layers. The different steps needed to relate the atmospheric to the ice-core H2O2 concentration are discussed. As with isotopic tracers, diffusion in the firn smooths the original H2O2 concentration profile (Auth.)

42-3299
Co-isotopic signature of two mechanisms of basal-ice formation in arctic outlet glaciers.
Souchez, R., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.163-166, 16 refs.
Lorrain, R., Tison, J.L., Jouzel, J.
Glacier ice, Ice formation, Isotope analysis, Ice pressure, Ice melting, Freezing.

42-3300
Detailed analysis of the rapid changes in ice-core parameters during the last ice age.
Staffelbach, T., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.167-170, 32 refs.
Stauffer, B., Oeschger, H.
Ice cores, Isotope analysis, Ice composition, Glaciation, Climatic changes, Compressive properties, Pleistocene, Stratigraphy, Greenland.

42-3301
Analysis of the seasonal variation in dust, Cl, NO3, and SO4-2 ions in two central Greenland firn cores.
Steffensen, J.P., *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.171-177, 27 refs.
Firn, Ice composition, Aerosols, Ice cores, Seasonal variations, Ions, Chemical analysis, Dust.

42-3302
Climatic records from the Dunde ice cap, China.
Thompson, L.G., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.178-182, 25 refs.
Wu, X., Mosley-Thompson, E., Xie, Z.
Ice cores, Climatic changes, Ice composition, Isotope analysis, Stratigraphy, Electrical resistivity, Oxygen isotopes, Ice temperature, Ice growth, China—Qilian Mountain.

42-3303
Anthropogenic impact on snow chemistry at Colle Gnifetti, Swiss Alps.
Wagenbach, D., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.183-187, 14 refs.
Münnich, K.O., Schotterer, U., Oeschger, H.
Snow composition, Chemical analysis, Glacier ice, Ice cores, Snow accumulation, Human factors, Environmental impact, Meteorological factors, Pollution, Dust, Switzerland—Alps.

42-3304
Depositional regime of the katabatic slope from Mizuho Plateau to the coast, East Antarctica.
Watanabe, O., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.188-192, 8 refs.
Fujii, Y., Satow, K.
Snow accumulation, Slope orientation, Snow cover distribution, Oxygen isotopes, Snow cover structure, Profiles, Antarctica—Mizuho Station.
Recently, a 700 m long ice core was drilled at Mizuho Station (2230 m a.s.l.), 270 km southeast of Showa Station and situated in a typical katabatic-slope region. In order to obtain basic knowledge for dating the core and for interpreting climatic change and depositional environment change along the core, a study of the regional characteristics of the snow-deposition regime on Mizuho Plateau has started. Surface-firn cores 10-30 m deep and snow-stake data obtained along the traverse routes on Mizuho Plateau since 1970 were analyzed. The general trend of annual snow accumulation and the regional characteristics of the delta O-18 profile of snow cover were obtained. (Auth.)

42-3305
Concentrations of cadmium, copper, lead and zinc in snow from near Dye 3 in South Greenland.
Wolff, E.W., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.193-197, 29 refs.
Peel, D.A.
Chemical analysis, Snowfall, Impurities, Air pollution, Snow depth, Seasonal variations, Greenland.
Snow composition

42-3306
Climatic interpretation of a continuous deuterium profile obtained from the Vostok ice core, Antarctica (160,000 years).
Jouzel, J., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.206-207, Summary only. 11 refs.
Ice composition, Isotope analysis, Climatic changes, Ice cores, Profiles, Paleoclimatology, Pleistocene, Oxygen isotopes, Antarctica—Vostok Station.
A 2,083 m ice core recovered at Vostok Station covers fully the last glacial-interglacial cycle, back to the ice age which preceded the last interglacial (160 ka b.p.). It allows access to many climatic and climate-related parameters from Be-10 measurements and aerosol concentration, to CO2 measurements. The first isotopic data set was largely discontinuous over the last 100 ka (only about 7% of the core was analyzed), but continuous beyond that time. Sampling of the ice was completed later, in the field, with continuous deuterium data for the whole core (total ice recovery is about 85%), combining the data of the 2,083 m core below 138 m and a complementary data set above. The core chronology was established using a two-dimensional ice-flow model and, for snow accumulation, taking into account change with time. (Auth. mod.)

42-3307
Dilemma of the rapid variations in CO2 in Greenland ice cores.
Oeschger, H., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.215-216, Summary only. 4 refs.
Neftel, A., Staffelbach, T., Stauffer, B.
Ice composition, Ice cores, Carbon dioxide, Snow impurities, Paleoclimatology, Greenland.
The question is posed whether rapid CO2 variations reflect atmospheric CO2-concentration changes or whether they are caused by the interaction of gases with chemical constituents in the ice matrix. Arguments in favour of an atmospheric origin of the CO2 variations are: CO2 measurements on an ice core from Siple Station show a monotonous increase over the past 250 years, from values around 280 ppm volume to values overlapping closely with the direct atmospheric data which have been obtained since 1958 (Neftel and others 1985). Thus a consistent picture of the anthropogenic CO2 increase has been obtained which is compatible with estimates of the man-made CO2 emissions and with the carbon-cycle calculations of the airborne fraction of these emissions. In addition, convincing CO2-concentration data have been obtained, from two ice cores from Greenland and four ice cores from Antarctica, for the transition from low (180-200 ppm volume) late-Wisconsin values to the higher (260-300 ppm volume) Holocene values. Arguments against an atmospheric origin for the rapid CO2 variations stem from detailed analyses of the ice core from Byrd Station. Observation of the increase in CO2 in both hemispheres indicates that within a few years CO2 becomes well mixed throughout the atmosphere. (Auth. mod.)

42-3308
Origin of arctic precipitation as deduced from its deuterium excess.
White, J., et al, *Annals of glaciology*, 1988, Vol.10, Symposium on Ice-Core Analysis, Bern, Switzerland, Mar. 30-Apr. 3, 1987. Proceedings, p.219-220, Summary only. 3 refs.
Johnsen, S.J., Dansgaard, W.
Snow composition, Isotope analysis, Firn, Ice cores, Snow accumulation, Seasonal variations, Models, Precipitation (meteorology).

42-3309
Toxic metals and metalloids in high alpine glaciers snow and ice.
Batifol, F.M., et al, Physico-chemical behaviour of atmospheric pollutants: Proceedings of the Third European Symposium, Apr. 1984, edited by B. Versino and G. Angeletti, Dordrecht, D. Reidel Publishing Company, 1984, p.471-479, 26 refs.
Boutron, C.F.
DLC TD881.P484 1984
Snow impurities, Glacier ice, Chemical composition, Metals, Mountains, Switzerland.

42-3310
Latticed dome collapse prediction due to settlement.
Shugar, T.A., et al, Structures Congress '87 related to Buildings, Orlando, Florida, Aug. 17-20, 1987. Proceedings. Building structures, edited by D.R. Sherman, New York, American Society of Civil Engineers, 1987, p.332-343, 8 refs.
Holland, T.J.
DLC TA630.S86
Cold weather construction, Foundations, Rheology, Antarctica—Amundsen-Scott Station.
The base of the South Pole geodesic dome is distorting due to movement in the ice field foundation. A determination of how much longer the dome can withstand ice field motion is aided with a nonlinear finite element analysis. A description of the base ring differential displacement is obtained by a least squares analysis of foundation displacement data. The topology and geometry of the geodesic dome has been reconstructed. There is a one-to-one correspondence between the modeled and the actual latticed framework. Two alternative structural models, based on the same topology, are developed and discussed. Computational results are obtained, and then displayed and analyzed using computer graphics. (Auth.)

42-3311
Using satellite information in studying continental waters. [Ispol'zovanie aerokosmicheskoĭ informatsii v issledovaniiakh vod sushi],
Usachev, V.F., ed, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, Vol.329, 128 p., In Russian. For selected papers see 42-3312 through 42-3322. Refs. passim.
Meltwater, Brightness, River basins, Ice forecasting, Lake ice, Snow line, Spaceborne photography, Pollution, Icebound lakes, Photointerpretation, Mapping, Snow surveys, Ice breakup, Catchment areas, Alpine landscapes, Gamma irradiation, Snow cover distribution, Snow surface, Ice conditions, Naleds, Spectra.

42-3312
Calculating meltwater hydrographs from satellite data, for catchment areas of the Stanovoy highlands. [Raschet gidrografa stoka talykh vod s pomoshch'iu sputnikovoĭ informatsii dlia rechnykh vodosborov Stanovogo nagor'ia],
Prokacheva, V.G., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.3-8, In Russian. 3 refs.
Chmutova, N.P.
Meltwater, Snow line, River basins, Hydrography, Snow melting, Alpine landscapes.

42-3313
Ice melting dates for the Yamal Peninsula lakes. [Sroki ochishcheniia ot l'da ozer na poluostrove IAmal],
Prokacheva, V.G., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.9-18, In Russian. 9 refs.
Chmutova, N.P.
Ice breakup, Spaceborne photography, Ice melting, Forecasting, Ice conditions, Spacecraft, Icebound lakes.

42-3314
Estimating the usefulness of spaceborne radar images for interpreting ice conditions on lakes. [Otsenka prigodnosti sputnikovykh radiolokatsionnykh izobrazheniĭ dlia deshifrirovaniia ledovoĭ obstanovki na ozerakh],
Borodulin, V.V., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.19-27, In Russian. 1 ref.
Zvereva, V.M.
Lake ice, Ice conditions, Spaceborne photography, Photointerpretation.

42-3315
Long range forecasting of characteristics of floodwater runoff from aerial gamma surveys in the basins of Severnaya Dvina and Pechora rivers. [Metodika dolgosrochnogo prognoza kharakteristik stoka polovod'ia s ispol'zovaniem aviatsionnykh gamma-s"emok v basseĭnakh rek Severnoĭ Dviny i Pechory],
Vershinina, L.K., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.28-43, In Russian. 7 refs.
Leonova, N.E.
River basins, Floods, Meltwater, Runoff, Snow cover distribution, Snow depth, Snow surveys, Gamma irradiation, Airborne equipment.

42-3316
Spectral brightness of snow cover surface after artificial dusting. [O spektral'noĭ iarkosti snezhnogo pokrova pri iskusstvennom zagriaznenii ego poverkhnosti],
Mikhaĭlov, V.A., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.44-52, In Russian. 7 refs.
Dusting, Snow surface, Spectra, Albedo, Measuring instruments, Pollution, Snow physics.

42-3317
Results of measuring the spectral brightness of freshwater ice. [Nekotorye rezul'taty izmereniĭ spektral'noĭ iarkosti presnovodnykh l'dov],
Prokacheva, V.G., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, Vol. 329, p.53-60, In Russian. 5 refs.
Tomazius, Kh., Usachev, V.F., Folgt, T.
Lake ice, Spectra, Brightness, Measuring instruments.

42-3318
Using numerical processing of satellite information in solving hydrological problems. [Ispol'zovanie tsifrovoĭ obrabotki sputnikovoĭ informatsii dlia resheniia gidrologicheskikh zadach],
Korolev, V.M., et al, *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.61-70, In Russian. 3 refs.
Griazeva, L.I.
Mapping, Photointerpretation, Snow cover distribution, Ice conditions, Floods, Hydrology, Spaceborne photography.

42-3319
Distribution of quantities and total areas of naleds according to their location elevation in river basins of the western BAM zone. [Raspredelenie summarnykh ploshchadeĭ i kolichestva naledeĭ po vysote mestopolozheniia v basseĭnakh rek zapadnoĭ zony BAMa],
Abakumenko, A.E., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.86-96, In Russian. 5 refs.
Naleds, Remote sensing, Classifications, Water chemistry, Slope orientation, Surveys, River basins.

42-3320
Composition and structure of an information data base for mapping hydrological objects from spaceborne photographs. [Sostav i struktura informatsionnoĭ bazy dannykh dlia kartografirovaniia gidrologicheskikh ob"ektov po sputnikovym snimkam],
Griazeva, L.I., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.97-103, In Russian. 10 refs.
Spaceborne photography, Data processing, Snow surveys, Mapping, Ice conditions, Floods.

42-3321
Evaluation of ice conditions on Lake Baykal from land, aerial and space surveys. [Otsenka ledovogo rezhima oz. Baĭkal po nazemnoĭ i aerokosmicheskoĭ informatsii],
[Anter, N.N., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.104-114, In Russian. 3 refs.
Lake ice, Ice conditions, Spaceborne photography, Aerial surveys, Route surveys.

42-3322
Evaluating ice conditions on the Lena River from satellite data. [Ispol'zovanie sputnikovoĭ informatsii dlia otsenki ledovoĭ obstanovki na reke Lene],
Kil'mianinov, V.V., *Leningrad. Gosudarstvennyĭ gidrologicheskiĭ institut. Trudy*, 1987, vol.329, p.115-117, In Russian.
Ice conditions, Photointerpretation, Deltas, Aerial surveys, Measuring instruments, River ice, Spaceborne photography.

42-3323
Soviet maritime Arctic, Proceedings of a workshop held May 10-13, 1987, Woods Hole, MA.
Brigham, L.W., ed, *Woods Hole Oceanographic Institution. Technical report*, Jan. 1988, WHOI-88-5, 67p., In English with Russian summary. Contains abstracts of presented papers and summary discussion.
Gately, E.M., ed.
Meetings, Polar regions, Marine transportation, Natural resources, Arctic Ocean.

42-3324
Optical properties of blowing snow.
Pomeroy, J.W., et al, *Journal of glaciology*, 1988, 34(116), p.3-10, 28 refs.
Male, D.H.
Blowing snow, Snow optics, Particle size distribution, Visibility, Grain size, Wind factors, Photography.

42-3325
Relation between the mass balance of western Canadian mountain glaciers and meteorological data.
Letreguilly, A., *Journal of glaciology*, 1988, 34(116), p.11-18, 8 refs.
Mountain glaciers, Glacier mass balance, Glacial hydrology, Meteorological data, Statistical analysis, Glacial meteorology, Ice temperature, Canada.

42-3326
On the albedo of snow in Antarctica: a contribution to I.A.G.O. (Interaction Atmosphere-Glacier-Ocean).
Wendler, G., et al, *Journal of glaciology*, 1988, 34(116), p.19-25, 27 refs.
Kelley, J.
Snow optics, Albedo, Snow surface, Solar radiation, Cloud cover, Diurnal variations, Antarctica—Adélie Coast.
As part of a larger experiment, detailed albedo measurements were carried out during the austral summer of 1985-86 in the dry-snow zone (1560 m) of Terre Adélie. The following results were found: mean albedo values were high (around 82.6%). On clear days, the albedo showed some dependency on the solar elevation. The albedo was found to be a function of cloud amount and type, increasing with the amount and thickness of clouds. In white-out conditions, very high albedos were found (>90%). The albedo showed a dependency on the type of snow. New snow displayed higher values than older snow, whose crystals had been destroyed by mechanical action. A simple model was developed to assess the influence of sastrugi on the albedo. This model could explain the asymmetric diurnal variation about solar noon of the measured albedo above a sastrugi field. The above 4 dependencies might explain the considerable discrepancies which can be found in the literature concerning the snow albedo of Antarctica. (Auth. mod.)

42-3327
Stochastic model of atmospheric rime icing.
Gates, E.M., et al, *Journal of glaciology*, 1988, 34(116), p.26-30, 11 refs.
Liu, A., Lozowski, E.P.
Ice accretion, Structures, Hoarfrost, Icing, Ice growth, Cloud droplets, Fog.

42-3328
Mass balance along two transects of the west side of the Greenland ice sheet.
Kostecka, J.M., et al, *Journal of glaciology*, 1988, 34(116), p.31-39, 46 refs.
Whillans, I.M.
Ice sheets, Glacier mass balance, Glacier flow, Glacier thickness, Surface properties, Glacier surfaces, Velocity, Shear stress, Impurities, Ice crystal structure.

42-3329
Pressure-sintering model for the densification of polar firn and glacier ice.
Wilkinson, D.S., *Journal of glaciology*, 1988, 34(116), p.40-45, 18 refs.
Glacier ice, Firn, Ice sintering, Pressure, Ice density, Ice structure, Temperature effects, Ice cores, Antarctica—Byrd Station.
A comprehensive multi-mechanism theory of pressure sintering has been applied to the densification of two polar ice sheets. The comparison, which is made using pressure-sintering mechanism maps, indicates that power-law creep is the controlling mechanism between 50% and 98% theoretical density. Lattice diffusion becomes dominant at low porosities. The densification rates predicted by the theory are in good agreement with the data, and suggest that a reasonable estimation of the densification behaviour of a polar ice sheet can be made using the theory, based on information obtained from a relatively shallow core. (Auth.)

42-3330
Flow-line model for calculating the surface profile and the velocity, strain-rate, and stress fields in an ice sheet.
Reeh, N., *Journal of glaciology*, 1988, 34(116), p.46-54, 28 refs.
Ice sheets, Glacier flow, Strains, Stresses, Profiles, Surface properties, Mathematical models, Velocity, Glacier thickness, Ice physics.

42-3331
Application of a flow model to the ice-divide region of Devon Island ice cap, Canada.
Reeh, N., et al, *Journal of glaciology*, 1988, 34(116), p.55-63, 17 refs.
Paterson, W.S.B.
Glacier flow, Ice sheets, Shear stress, Ice cover thickness, Velocity, Temperature variations, Ice temperature, Strains, Rheology, Glacier beds.

42-3332
Model of icicle growth.
Makkonen, L., *Journal of glaciology*, 1988, 34(116), p.64-70, 21 refs.
Ice growth, Ice formation, Heat transfer, Mathematical models, Unfrozen water content, Theories.

42-3333
Localized basal freezing within George VI Ice Shelf, Antarctica.
Pedley, M., et al, *Journal of glaciology*, 1988, 34(116), p.71-77, 17 refs.
Paren, J.G., Potter, J.R.
Ice shelves, Freezing, Ice melting, Meltwater, Glacial deposits, Temperature gradients, Salinity, Freezing points, Moraines, Antarctica—George VI Ice Shelf.
Hobbs Pool is an area of thin ice shelf situated within George VI Ice Shelf. Thicker ice shelf surrounding Hobbs Pool isolates the upper 155 m of the water lying at the same depth elsewhere under the ice shelf. Summer melt-water lakes drain through crevasses at Hobbs Pool forming a 155 m thick layer of low-salinity water close to its freezing point. Colder and more saline water in the lower part of this layer leads to *in-situ* freezing of fresher water lying above it. Below 155 m depth, the water temperature and salinity are linearly related by basal melting which is observed elsewhere under the ice shelf. The surface ice shows areas of deformation and deposits of subglacial rock debris which may result from upward particle paths in the area. The raising of subglacial rock debris on to the ice surface may provide a mechanism for the transport of erratics across the ice shelf to Alexander Island from the base of Palmer Land glaciers. (Auth. mod.)

42-3334
Kinetic friction of snow.
Colbeck, S.C., *Journal of glaciology*, 1988, 34(116), MP 2339, p.78-86, 18 refs.
Metal snow friction, Water films, Snow cover, Snow melting, Grain size, Temperature effects, Velocity, Shear strength, Friction, Analysis (mathematics).
Three components of the kinetic friction of snow are described but only the lubricated component of friction is treated in detail. This component depends upon the thickness of water films which support a slider on snow grains over a small fraction of its area. The thickness of the film decreases with ambient temperature in a manner which is sensitive to the thermal conductivity of the slider. The minimum value of friction at any temperature is reached at an intermediate value of speed because friction decreases as the slider first begins to move and the films form but then increases at higher speeds because of the shear resistance. At sub-freezing temperatures a small area in the front part of the slider is dry and the friction is high. Once the water film is formed it increases in thickness towards an equilibrium value which can be very sensitive to slider properties, speed, and temperature. It appears that the mechanisms may be very different for hydrophobic and hydrophilic sliders. From the equations derived here it is clear why friction decreases with repeated passes over the same snow.

42-3335
Drainage of the Austre Okstindbreen ice-dammed lake, Okstindan, Norway.
Knudsen, N.T., et al, *Journal of glaciology*, 1988, 34(116), p.87-94, 28 refs.
Theakstone, W.H.
Glacial rivers, Glacial lakes, Drainage, Ice dams, Electrical resistivity, Ions, Water chemistry, Meltwater, Glacial hydrology, Norway—Austre Okstindbreen.

42-3336
Nature and origin of a jökulhlaup near Casey Station, Antarctica.
Goodwin, I.D., *Journal of glaciology*, 1988, 34(116), p.95-101, 15 refs.
Glacial rivers, Meltwater, Subglacial drainage, Water chemistry, Oxygen isotopes, Chemical analysis, Glacier beds, Moraines, Antarctica—Law Dome.
A jökulhlaup event of 6 months' duration occurred near Casey Station in late Mar. 1985. This was followed by sporadic outbursts during the autumn and winter of 1986. The event is the first recorded outburst of water from beneath a cold ice-cap terminus on Law Dome and, to the author's knowledge, in Antarctica. From the results of oxygen-isotope and solute analysis, the water was found to have originated as basal melt water. It contained a high total solute load with a dominant enrichment in alkalis, indicating that it had been squeezed through subglacial sediments for an extensive time period. Evidence from the subglacial topography, basal ice exposures, and the sedimentology of nearby supraglacial moraines supports the presence of an ice-marginal subglacial water reservoir as the jökulhlaup source. (Auth.)

42-3337
Mass balance and thermal regime of Laika ice cap, Coburg Island, N.W.T., Canada.
Blatter, H., et al, *Journal of glaciology*, 1988, 34(116), p.102-110, 26 refs.
Kappenberger, G.
Glacier mass balance, Ice temperature, Thermal regime, Glaciology, Wind factors, Snowdrifts, Mapping, Topographic effects, Climatic factors.

42-3338
Seismic evidence for a weak basal layer during the 1982 surge of Variegated Glacier, Alaska, U.S.A.
Richards, M.A., *Journal of glaciology*, 1988, 34(116), p.111-120, 20 refs.
Glacier surges, Seismic reflection, Glacier beds, Subglacial drainage, Meltwater, Basal sliding, Shear strength, Water pressure, United States—Alaska—Variegated Glacier.

42-3339
Ice-shelf response to ice-stream discharge fluctuations: I. Unconfined ice tongues.
MacAyeal, D.R., et al, *Journal of glaciology*, 1988, 34(116), p.121-127, 17 refs.
Barcilon, V.
Subglacial drainage, Glacier tongues, Ice shelves, Glacier flow, Stresses, Climatic factors, Sea level, Ice mechanics, Analysis (mathematics).
Ice-stream discharge fluctuations constitute an independent means of forcing unsteady ice-shelf behavior, and their effect must be distinguished from those of oceanic and atmospheric climate to understand ice-shelf change. In addition, ice-stream-generated thickness anomalies may constitute a primary trigger of ice-rise formation in the absence of major sea-level fluctuations. Such triggering may maintain the current ice-rise population that, in turn, contributes to long-term ice-sheet stability. It is shown that ice-stream-generated fluctuations of an ideal, two-dimensional ice shelf propagate along two characteristic trajectories. One trajectory permits instantaneous transmission of ground-line velocity changes to all points downstream. The other trajectory represents slow transmission of grounding-line thickness changes along Lagrangian particle paths. (Auth.)

42-3340
Ice-shelf response to ice-stream discharge fluctuations: II. Ideal rectangular ice shelf.
MacAyeal, D.R., et al, *Journal of glaciology*, 1988, 34(116), p.128-135, 20 refs.
Lange, M.A.
Ice shelves, Subglacial drainage, Ice cover thickness, Glacier flow, Ice mechanics, Glacier thickness, Analysis (mathematics), Variations.
Ice-shelf thickness and velocity anomalies resulting from ice-stream discharge fluctuations are calculated for an ideal ice shelf fed by a single ice stream and confined within a rectangular coastal geometry. Ice-shelf response to periodic forcing is found to be linear (thickness and velocity anomalies oscillate at the forcing frequency, and response scales with the forcing). Thickness anomalies are trapped near the ice-stream outlet and propagate down-stream at a slow advective time-scale. Velocity anomalies tend to be widespread and propagate instantaneously throughout the ice-shelf environment. Ice-shelf response is sensitive to ice-stream fluctuation time-scale in the manner of a low-pass filter; longer forcing time-scales produce more widespread ice-shelf response. If ice-stream velocity and thickness fluctuations are in phase, thickness-anomaly maxima typically occur down-stream of the ice-stream outlet. This effect may determine where ice rumples and rises are likely to form in response to stochastic ice-stream variability. (Auth.)

42-3341
Operation of airports. [Ekspluatatsiia aerodromov], Goretskiĭ, L.I., Moscow, Transport, 1986, 280p., In Russian with abridged English table of contents enclosed. 2nd revised and enlarged ed. 13 refs. For 1979 ed. see 34-769.
Airports, Ice runways, Winter maintenance, Pavements, Icing, Countermeasures, Cold weather operation.

42-3342
Daily monitoring of a rock tablet at a maritime antarctic site: moisture and weathering results.
Hall, K., *British Antarctic Survey. Bulletin*, May 1988, No.79, p.17-25, 30 refs.
Rock properties, Water content, Freeze thaw cycles, Weathering, Signy Island.
The mass of a tablet of indigenous rock was monitored daily for one year in order to study changes in moisture content and timing of weathering losses. The broad climatic conditions to which the tablet was subjected were noted. It was found that, within the maritime antarctic, freezing temperatures occur when rocks have high moisture contents. Although rock tablets may be considered 'unnatural', they can provide valuable information on daily variability of moisture status which is essential for the planning and interpretation of realistic weathering simulations. (Auth.)

42-3343
Installation and performance of the STABLE instrumentation at Halley.
King, J.C., et al, *British Antarctic Survey. Bulletin*, May 1988, No.79, p.65-77, 13 refs.
Anderson, P.S.
Ice air interface, Boundary layer, Meteorological instruments, Antarctica—Halley Station.
The instrumentation installed at Halley for STABLE (the STable Antarctic Boundary Layer Experiment) is described. Turbulence measurements were made using three ultrasonic anemometers, with conventional cup anemometers providing additional profile measurements. Temperature profiles were measured by platinum resistance thermometers and a Sodar system was used to provide a continuous record of boundary layer structure. Instruments generally performed well although blowing snow and rime ice accumulation affected their performance at times. (Auth.)

42-3344
Structural glaciology of George VI Ice Shelf, Antarctic Peninsula.
Reynolds, J.M., et al, *British Antarctic Survey. Bulletin*, May 1988, No.79, p.79-95, 22 refs.
Hambrey, M.J.
Ice shelves, Ice structure, Ice creep, Antarctica—George VI Ice Shelf.
Lakes form each summer on the surface of George VI Ice Shelf and their distribution reflects the large-scale structure of the ice shelf. The ice shelf is complex with distinct flow units originating in Palmer Land which maintain their structural integrity as they flow across to, and impinge against, Alexander Island. The dominant structures are longitudinal foliation and crevasse traces. Longitudinal compression results in folding of pre-existing layers but deformation in the ice shelf does not result in overprinting of existing structures, except possibly in narrow zones of intense shear adjacent to Alexander Island. Flow and thickness patterns indicate dynamic inhomogeneity across much of the ice shelf. (Auth.)

42-3345
Low-frequency backscatter from Arctic leads.
Medwin, H., et al, *Acoustical Society of America. Journal*, May 1988, 83(5), p.1794-1803, 12 refs.
Browne, M.J., Johnson, K.R., Denny, P.L.
Underwater acoustics, Subglacial observations, Ice bottom surface, Polynyas, Backscattering, Models.

42-3346
Surface temperatures and sea ice typing for northern Baffin Bay.
Steffen, K., et al, *International journal of remote sensing*, Mar. 1988, 9(3), p.409-422, 8 refs.
Lewis, J.E.
Sea ice distribution, Polynyas, Remote sensing, Water temperature, Ice temperature, Ice conditions, Infrared reconnaissance.

42-3347
Intercomparison of satellite-derived cloud analyses for the Arctic Ocean in spring and summer.
McGuffie, K., et al, *International journal of remote sensing*, Mar. 1988, 9(3), p.447-467, 33 refs.
Clouds (meteorology), Infrared reconnaissance, Polynyas.

42-3348
Model of satellite radar altimeter return from ice sheets.
Ridley, J.K., et al, *International journal of remote sensing,* Apr. 1988, 9(4), p.601-624, 38 refs.
Partington, K.C.
Ice sheets, Glacier mass balance, Ice surface, Height finding, Radar.

42-3349
Non-Lambertian reference panel effect on spectral reflectance measurements of freshwater ice.
Leshkevich, G.A., *International journal of remote sensing,* Apr. 1988, 9(4), p.825-832, 13 refs.
Ice optics, Reflectivity, Lake ice.

42-3350
Snowmobiling impact on snow and soil properties and on winter cereal crops.
Pesant, A.R., *Canadian field-naturalist,* Jan.-Mar. 1987, 101(1), p.22-32, With French summary. 18 refs.
Snow vehicles, Environmental impact.

42-3351
Alaska's CRREL permafrost tunnel.
Johansen, N.I., et al, *Tunnelling and underground space technology,* 1988, 3(1), p.19-24, With French summary. 10 refs.
Huang, S.L., Aughenbaugh, N.B.
Tunnels, Permafrost structure, Mining, Excavation, Permafrost preservation, Underground facilities, U.S. Army CRREL.

42-3352
Quench cooled ice crystal imprint size: a micro-method for study of macromolecular hydration.
Cameron, I.L., et al, *Scanning microscopy,* June 1988, 2(2), p.885-898, Includes discussion. 31 refs.
Hunter, K.E., Fullerton, G.D.
Electron microscopy, Ice crystals.

42-3353
Numerical study of the formation of Arctic stratus clouds with consideration of absorbing aerosol particles.
Forkel, R., et al, *Meteorologische Rundschau,* June 1986, 39(3), p.74-79, With German summary. 20 refs.
Wendling, P.
Clouds (meteorology), Aerosols, Air pollution.

42-3354
Winter 1788-89: the Lagoon of Venice freezes over.
Lindgren, S., et al, *Meteorologische Rundschau,* Aug. 1985, 38(4), p.112-118, With German summary. 20 refs.
Neumann, S., Tiepolo, M.F., Zolli, E.
Freezeup, Italy—Venice.

42-3355
Evaporation from a seasonal snow cover. [Verdunstungsmessungen über einer winterlichen Schneedecke],
Kaser, G., *Meteorologische Rundschau,* Feb. 1985, 38(1), p.20-22, In German with English summary. 8 refs.
Snow evaporation, Snow temperature.

42-3356
Scientific-technical progress in marine transportation. [Nauchno-tekhnicheskiĭ progress na morskom transporte],
Levyĭ, V.D., ed, Moscow, Transport, 1987, 145p., In Russian. For selected papers see 42-3357 and 42-3358. Refs. passim.
Poliantsev, IU.D., ed.
Marine transportation, Air cushion vehicles, Construction materials, Loading, Modular construction.

42-3357
Fundamentals of constructing a container-packaging transportation-technological system. [Osnovy postroeniia kontĕinerno-paketnoĭ transportno-tekhnologicheskoĭ sistemy],
Mirzabeĭli, V.A., et al, Nauchno-tekhnicheskiĭ progress na morskom transporte (Scientific-technical progress in marine transportation) edited by V.D. Levyĭ and IU.D. Poliantsev, Moscow, Transport, 1987, p.57-63, In Russian. 3 refs.
Stepanets, A.V.
Marine transportation, Construction materials, Air cushion vehicles, Modular construction.

42-3358
Principles of operating the loading-unloading air-cushion device for container transportation. [Printsipy upravleniia transportnym ustroĭstvom na vozdushnoĭ podushke dlia zagruzki-razgruzki kontĕinerov],
Koval', M.A., et al, Nauchno-tekhnicheskiĭ progress na morskom transporte (Scientific-technical progress in marine transportation) edited by V.D. Levyĭ and IU.D. Poliantsev, Moscow, Transport, 1987, p.63-70, In Russian. 2 refs.
Makarov, S.I.
Marine transportation, Air cushion vehicles, Modular construction, Construction materials.

42-3359
Study of machines for drilling and pile construction. [Issledovanie mashin dlia svaĭnykh i burovykh rabot],
Golovachev, A.S., ed, Moscow, Transport, 1987, 151p., In Russian. For selected papers see 42-3360 through 42-3364. Refs. passim.
Permafrost physics, Rock drilling, Equipment, Hardness tests, Measuring instruments, Permafrost beneath structures, Construction equipment, Foundations, Piles.

42-3360
Construction and improvement of machines designed for foundation pit excavation for power-net supports of electrified railroads. [Sozdanie i sovershenstvovanie mashin dlia razrabotki kotlovanov pod fundamenty opor kontaktnoĭ seti elektrifitsiruemykh zheleznykh dorog],
Bel'kind, M.B., Issledovanie mashin dlia svaĭnykh i burovykh rabot (Study of machines for drilling and pile construction) edited by A.S. Golovachev, Moscow, Transport, 1987, p.54-61, In Russian. 4 refs.
Power line supports, Foundations, Excavation, Construction equipment, Piles, Baykal Amur railroad, Discontinuous permafrost.

42-3361
Development of a mathematical model for studying the performance dynamics of a drilling assembly. [Razrabotka matematicheskoĭ modeli dlia issledovaniia dinamiki raboty buril'noĭ mashiny],
Mitiashov, V.A., Issledovanie mashin dlia svaĭnykh i burovykh rabot (Study of machines for drilling and pile construction) edited by A.S. Golovachev, Moscow, Transport, 1987, p.110-115, In Russian.
Foundations, Permafrost structure, Piles, Rock drilling, Permafrost.

42-3362
Studying the process of static-dynamic excavation of frozen ground. [Issledovanie protsessa statiko-dinamicheskogo razrusheniia merzlykh gruntov],
Isaev, O.K., Issledovanie mashin dlia svaĭnykh i burovykh rabot (Study of machines for drilling and pile construction) edited by A.S. Golovachev, Moscow, Transport, 1987, p.115-124, In Russian. 7 refs.
Mathematical models, Penetration tests, Frozen ground, Drills, Wedges.

42-3363
Experience in using a combination of instruments to speed up determinations of frozen ground properties. [Opyt primeneniia kompleksa apparatury dlia uskorennogo opredeleniia svoĭstv merzlykh gruntov],
Morozov, A.A., et al, Issledovanie mashin dlia svaĭnykh i burovykh rabot (Study of machines for drilling and pile construction) edited by A.S. Golovachev, Moscow, Transport, 1987, p.124-137, In Russian. 5 refs.
Permafrost physics, Permafrost thermal properties, Permafrost beneath structures, Foundations, Measuring instruments, Surveys.

42-3364
Studying the reliability of the drilling unit BTS-300. [Issledovaniia nadezhnosti burovoĭ mashiny BTS-300],
Kurdiumov, S.G., Issledovanie mashin dlia svaĭnykh i burovykh rabot (Study of machines for drilling and pile construction) edited by A.S. Golovachev, Moscow, Transport, 1987, p.137-143, In Russian.
Permafrost physics, Hardness tests, Rock drilling, Drills, Equipment, Wells, Analysis (mathematics), Permafrost thermal properties, Measuring instruments.

42-3365
Tests on compressed snow for antarctic runway construction.
Russell-Head, D.S., *Melbourne, University. MUPAS report,* Dec. 1982 (rev May 1983), No.55, 60p. + appends., 11 refs.
Laboratory techniques, Snow mechanics, Snow physics, Bearing strength, Aircraft landing areas, Antarctica—Law Dome.
Snow which successfully duplicates the *in situ* surface snow on Law Dome near Casey has been made in the laboratory. Compaction, unconfined compression and California Bearing Ratio (CBR) tests have been performed on this laboratory-made snow. Data from these tests support the feasibility of using conventional large multi-tyred pneumatic rollers (which have tyre pressures up to 1000 kPa) to compact the surface snow on Law Dome to a density sufficient for use as a runway for wheeled Lockheed C130 aircraft. The CBR value of compacted snow depends strongly on its density. A CBR value of about 10 is required by the wheeled C130 and this was achieved at a snow density of 0.6 Mg/cu m. The CBR strength of compressed snow increased with the time after compaction and this aging effect was more pronounced at low densities. The temperature of the compacted snow did not strongly influence the CBR strength of the snow. The pavement thickness required for C130 operation depends on the pavement CBR, the subgrade CBR and the acceptable wheel settlement. Calculations indicate that for a wheel settlement of 20 mm, a pavement CBR of 10 and a subgrade CBR of 3, the required pavement thickness is about 0.5 m. (Auth. mod.)

42-3366
Dislocation motion in ice: a study by synchrotron X-ray topography.
Ahmad, S., et al, *Philosophical magazine A,* May 1988, 57(5), p.749-766, 26 refs.
Whitworth, R.W.
Ice crystal structure, X ray analysis, Dislocations (materials).

42-3367
Construction of Arctic concrete island drilling system (super CIDS).
Ono, Y., et al, *Civil engineering in Japan,* Dec. 1985, Vol.24, p.24-34.
Offshore drilling, Concrete structures.

42-3368
Beware of snowy roofs.
Eriksson, A., et al, *American journal of public health,* Mar. 1988, 78(3), p.322, 4 refs.
Björnstig, U., Kullenberg, K.
Safety, Roofs, Snow removal.

42-3369
Mystery of Arctic haze.
Carey, J., *Weatherwise,* Apr. 1988, 41(2), p.97-99, Reprinted from International wildlife, March/April 1988.
Haze, Air pollution.

42-3370
Study of coastal vegetation at a site on Hudson Bay near Winisk, Ontario.
Sims, R.A., et al, *Canadian field-naturalist,* Jul.-Sep. 1987, 101(3), p.335-345, 40 refs.
Wickware, G.M., Cowell, D.W.
Plants (botany), Plant ecology, Subpolar regions, Canada—Ontario—Winisk.

42-3371
Floristic modification of low arctic tundra by the Arctic Ground Squirrel, *Spermophilus parryii.*
Mallory, F.F., et al, *Canadian field-naturalist,* Jul.-Sep. 1987, 101(3), p.388-391, 16 refs.
Hefferman, T.D.
Tundra, Ecology, Animals.

42-3372
Way to the riches of Siberia. [Put' k bogatstvam Sibiri],
Il'ina, L.N., Moscow, Mysl', 1987, 302p., In Russian with abridged English table of contents enclosed. Refs. p.298-302.
Forestry, Economic development, Mining, Natural resources, Hydraulic structures, Construction materials, Electric power, Transportation, Permafrost distribution, Permafrost control, Baykal Amur railroad.

42-3373
Computer mapping of southern ocean ice from *Cosmos-1500* radiometric data. [Avtomatizirovannoe postroenie kart morskikh l'dov IUzhnogo okeana po dannym trassovykh radiometricheskikh izmereniĭ s ISZ "Kosmos-1500"],
Nikitin, P.A., et al, *Issledovanie Zemli iz kosmosa,* Sep.-Oct. 1987, No.5, p.92-98, In Russian with English summary. 12 refs.
Spiridonov, IU.G., Trapeznikova, N.B.
Data processing, Sea ice distribution, Mapping.
A methodology is developed for compiling schematics of the spacial distribution of sea ice in the south polar region using *Cosmos-1500* alongtrack microwave radiometry. Space-acquired data processing stages are described and examples of computer compiled schematics are given, along with their comparison with data from other sources. (Auth.)

42-3374
Ice conditions in the antarctic Indo-Pacific sector from "Meteor-2" satellite data collected during the summer seasons, 1977-1983. ¡Osobennosti ledovykh uslovii indo-tikhookeanskogo sektora Antarktiki po dannym IZS "Meteor-2" v letnii period 1977-1983 gg.¡,
Nikitin, A.A., Biologo-okeanograficheskie issledovaniia tikhookeanskogo sektora Antarktiki (Biological and oceanographic investigations of the Pacific sector of the antarctic ocean). Edited by R.R. Makarov, Moscow, 1987, p.62-68, In Russian with English summary. 10 refs.
Ice edge, Sea ice distribution, Polynyas, Antarctica—Ross Sea.
Based on data from the "Meteor-2" satellite, stationary ice formations and ice free areas are determined for 1977-1983 summer periods. The dynamics of polynyas in the Ross Sea are analyzed, with the following results: in very warm years, the Ross Sea is free of ice up to 140 W; ice bands having a width up to several hundred km originate from the main ice massifs, a stationary location of baric centers, and meteorological conditions connected with them, cause the formation of stationary ice and ice free areas. (Auth. mod.)

42-3375
Fluctuations of ice conditions in the Somov and Ross seas. ¡Kolebaniia ledovitosti v moriakh Somova i Rossa¡,
Nikitin, A.A., et al, Biologo-okeanograficheskie issledovaniia tikhookeanskogo sektora Antarktiki (Biological and oceanographic investigations of the Pacific sector of the antarctic ocean). Edited by R.R. Makarov, Moscow, 1987, p.68-74, In Russian with English summary.
Shurunov, N.A.
Sea ice distribution, Drift, Wind factors, Antarctica—Ross Sea.
Data from investigations conducted during the 1979-1983 summer seasons, on ice conditions in the Ross and Somov seas, show the following: high interannual fluctuations; the conditions in the eastern Somov Sea area are in a counterphase with those in the western Ross Sea area. This is caused by the ice drifting northward from the Ross Sea along the west coast, and by the change of the drift direction—northwest—due to east wind currents. (Auth. mod.)

42-3376
Convention of Soviet oceanographers, 3rd, Leningrad, Dec. 14-19, 1987. Section Physics and Chemistry of the Ocean. Wind, Internal and Tidal Waves; Tsunami Waves. Summaries of reports. ¡Sektsiia fizika i khimiia okeana. Vetrovye, vnutrennie, prilivnye volny; volny tsunami. Tezisy dokladov¡.
S"ezd sovetskikh okeanologov, 3rd, Leningrad, Dec. 14-19, 1987, Leningrad, Gidrometeoizdat, 1987, 164p., In Russian.
Lentovskaia, L.L., ed.
Tides, Ocean waves, Ice cover effect, Mathematical models.

42-3377
Transformation of long nonlinear waves in an ice-covered coastal zone. ¡Transformatsiia dlinnykh nelineĭnykh voln v pribrezhnoĭ zone moria pokrytoĭ l'dom¡,
Zheleznlak, M.I., et al, S'ezd sovetskikh okeanologov, 3rd, Leningrad, Dec. 14-19, 1987. Sektsiia fizika i khimiia okeana. Vetrovye, vnutrennie, prilivnye volny; volny tsunami. Tezisy dokladov (Convention of Soviet oceanographers, 3rd, Leningrad. Dec. 14-19, 1987. Section Physics and Chemistry of the Ocean. Wind, Internal and Tidal Waves; Tsunami Waves. Summaries of reports) edited by L.L. Lentovskaia., Leningrad, Gidrometeoizdat, 1987, p.96-97, In Russian.
Tkachenko, V.A., IAkovlev, V.V.
Ocean waves, Ice cover effect, Fast ice, Pack ice, Mathematical models.

42-3378
Ice cover effect on distribution of long waves. ¡Vliianie ledianogo pokrova na rasprostranenie dlinnykh voln¡,
Martynov, V K., S'ezd sovetskikh okeanologov, 3rd, Leningrad, Dec. 14-19, 1987. Sektsiia fizika i khimiia okeana. Vetrovye, vnutrennie, prilivnye volny; volny tsunami. Tezisy dokladov (Convention of Soviet Oceanographers, 3rd, Leningrad, Dec. 14-19, 1987. Section Physics and Chemistry of the Ocean. Wind, Internal and Tidal Waves; Tsunami Waves. Summaries of reports) edited by L.I. Lentovskaia., Leningrad, Gidrometeoizdat, 1987, p.129-130, In Russian.
Pack ice, Ocean waves, Drift, Ice floes, Ice friction, Ice cover effect, Models.

42-3379
Long range trends in the development of outside finish for buildings in the North. ¡Perspektivnye napravleniia v naruzhnoĭ otdelke zdaniĭ na Severe¡,
Kholopova, L.I., ed, Leningrad, LenZNIIEP, 1985, 79p., In Russian. For selected papers see 42-3380 through 42-3382. Refs. passim.
Panels, Buildings, Frost action, Cold weather construction, Bricks, Construction materials, Walls, Masonry, Climatic factors, Environmental impact, Cold weather operation.

42-3380
Traditional and new materials and methods of outside finishing of buildings, suitable for northern conditions. ¡Traditsionnye i novye materialy i sposoby otdelki zdaniĭ, prigodnye dlia usloviĭ Severa¡,
Kholopova, L.I., Perspektivnye napravleniia v naruzhnoĭ otdelke zdaniĭ na Severe (Long range trends in the development of outside finish for buildings in the North) edited by L.I. Kholopova, Leningrad, LenZNIIEP, 1985, p.3-10, In Russian. 7 refs.
Buildings, Construction materials, Walls, Subpolar regions, Environmental impact.

42-3381
Esthetic development of urban media in the North with the use of new materials and technical aids. ¡Perspektivy esteticheskogo razvitiia gorodskoĭ sredy Severa s ispol'zovaniem novykh materialov i tekhnicheskikh sredstv¡,
Borovskaia, E.A., Perspektivnye napravleniia v naruzhnoĭ otdelke zdaniĭ na Severe (Long range trends in the development of outside finish for buildings in the North) edited by L.I. Kholopova, Leningrad, LenZNIIEP, 1985, p.11-15, In Russian.
Urban planning, Construction materials, Frost action, Buildings, Design, Subarctic landscapes.

42-3382
Trends in technological research of industrial finishing of wall panels in the large panel plants of the northern USSR. ¡Napravleniia tekhnologicheskikh razrabotok v oblasti industrial'noĭ otdelki stenovykh paneleĭ na predpriiatiiakh KPD severnoĭ zony strany¡,
Zaltseva, G.M., Perspektivnye napravleniia v naruzhnoĭ otdelke zdaniĭ na Severe (Long range trends in the development of outside finish for buildings in the North) edited by L.I. Kholopova, Leningrad, LenZNIIEP, 1985, p.16-19, In Russian.
Large panel buildings, Construction materials, Frost action.

42-3383
Long term climate changes from crystal growth ¡comments and reply¡.
Alley, R.B., et al, *Nature*, Apr. 14, 1988, 332(6165), p.592-593, 13 refs. For the article being discussed see 41-2750 (16F-35244).
Perepezko, J.H., Bentley, C.R., Petit, J.P., Duval, P., Lorius, C.
Paleoclimatology, Ice crystal growth, Ice composition.
Alley, et al dispute the proposed theory by Petit, et al that small grain size in Wisconsinan ice in the Dome C ice core resulted from cold surface temperatures at the time of deposition. They cite the drag impurities in the ice as the probable cause of the small grain size in this ice, providing data reanalysis interpretations as their reasons for the disagreement. The proponents of the cold surface temperature interpretation strongly defend their thesis, discussing the stability of extrinsic interstitial defects, the value of activation energy in ice growth, and the effect of soluble impurity content.

42-3384
Current patterns in McMurdo Sound, Antarctica and their relationship to local biotic communities.
Barry, J.P., et al, *Polar biology*, May 1988, 8(5), p.367-376, Refs. p.376.
Dayton, P.K.
Sea ice, Ice cover effect, Biomass, Antarctica—McMurdo Sound.
Current speed and direction measurements collected during summer and spring of 1984 indicated that currents in McMurdo Sound were dominated by oscillatory flow associated with diurnal tidal components (O1, K1, P1). Net flow was southward in the eastern Sound, mixed in the central Sound, and northward in the western Sound. Short term observations (<5 days) from nearshore stations indicated a similar but more sluggish pattern of tidal and mean flow. Hydrographic data collected during the same period indicated a similar pattern of cold water with low chlorophyll *a* content flowing northward from under the Ross Ice Shelf in the western Sound and denser, slightly warmer water with higher chlorophyll *a* content flowing southward in the eastern Sound. Previous studies have shown that productivity is higher in the eastern Sound than in the west, apparently due to the circulation pattern. The western Sound consists of waters from beneath the Ross Ice Shelf which have a lower phytoplankton standing stock than eastern Sound waters which enter from the north. More sluggish current speeds in the western Sound result in even lower particle fluxes past benthic consumers. Finally, more persistent ice cover in the west further inhibits in situ primary productivity. (Auth.)

42-3385
Hydrographic patterns in McMurdo Sound, Antarctica and their relationship to local benthic communities.
Barry, J.P., *Polar biology*, May 1988, 8(5), p.377-391.
Sea ice, Ice cover effect, Biomass, Antarctica—McMurdo Sound.
Measurements of hydrographic parameters (temperature, salinity, nitrate, nitrite, phosphate, chlorophyll *a*, phaeophytin, and oxygen) in McMurdo Sound during spring 1984, before the regional phytoplankton bloom, and summer 1984, after the peak of the bloom, indicate that several processes contribute to changes in the vertical and horizontal structure of the water column. Regional variation in the source of water masses within the Sound, ice cover patterns, and meltwater from the Ross Ice Shelf and nearby continental glaciers result in east-west and north-south gradients in the thermohaline, nutrient, and productivity characteristics of the Sound. These patterns are also related to the extremely variable structure and productivity of shallow water benthic macrofaunal communities in McMurdo Sound. Nutrient ratios indicate that glacial meltwater from the Ross Ice Shelf and/or nearby terrestrial sources may be an important component of the summer meltwater input to the western Sound. Enhanced water column stability due to this input may prolong the maintenance of high water column stability as this water mass flows northward and result in particularly high productivity in northern McMurdo Sound. (Auth. mod.)

42-3386
Nival-glacial systems and their mapping. ¡Nival'no-gliatsial'nye sistemy i ikh kartografirovanie¡,
Osokin, N.I., Moscow, 1988, 135p., In Russian with English summary and table of contents. Refs. p.116-132.
Glaciology, Nivation, Glaciers, Snow cover distribution, Avalanches, Aerial surveys, Ground ice, Permafrost, Naleds, Mapping, Models.

42-3387
Climatic characteristics of snow-ice resources of the world. ¡Klimaticheskie kharakteristiki snezhno-ledovykh resursov mira¡,
Kopanev, I.D., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1987, Vol.515, p.3-8, In Russian. 7 refs.
Climatology, Water balance, Mapping, Ice cover thickness, Snow cover distribution, Hydrology, Glaciology, Polar regions.

42-3388
Methods of controlling extreme temperatures of soil surfaces. ¡O metodike kontrolia ekstremal'nykh temperatur poverkhnosti pochvy¡,
Naumova, L.P., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1987, Vol.515, p.26-30, In Russian. 5 refs.
Soil air interface, Heat transfer, Soil temperature, Seasonal variations, Analysis (mathematics).

42-3389
Analysis of mean long-term snow cover characteristics for different periods. ¡Analiz srednikh mnogoletnikh kharakteristik snezhnogo pokrova za razlichnye periody¡,
Lipovskaia, V.I., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1987, Vol.515, p.41-44, In Russian. 2 refs.
Manuals, Snow surveys, Snow water equivalent, Snow depth, Climatology, Snow accumulation, Snow cover distribution.

42-3390
Allowing for ice loads in building tall structures. ¡Uchet gololednykh nagruzok pri stroitel'stve vysotnykh sooruzhenii¡,
Mytarev, M.N., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1987, Vol.515, p.58-65, In Russian. 8 refs.
Icing, Buildings, Ice loads, Maps, Design, Ice accretion, Ice cover thickness.

42-3391
Methods of calculating air temperature for coldest periods. ¡Metodika rascheta temperatury vozdukha naibolee kholodnogo perioda¡,
Pashina, O.B., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1987, Vol.515, p.66-70, In Russian. 3 refs.
Kliueva, M.V.
Walls, Heating, Heat loss, Forecasting, Design, Buildings, Thickness, Computer applications.

42-3392
Freezing of liquids in underground pipelines. [Zatverdevanie zhidkosti v podzemnykh truboprovodakh],
Bondarev, E.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Seriia Dinamika sploshnoi sredy. Sbornik nauchnykh trudov,* 1987, Vol.83, p.32-39, In Russian. 9 refs.
Kapitonova, T.A.
Stefan problem, Underground pipelines, Soil freezing, Frost penetration, Pipeline freezing, Ice formation, Phase transformations.

42-3393
Automated system for calculating snowmelt flood hydrographs of plain rivers. [Osnovy avtomatizirovannoĭ sistemy rascheta gidrografov snegovogo polovod'ia ravninnykh rek],
Burakov, D.A., et al, *Akademiia nauk SSSR. Sibirskoe otdelenie. Institut gidrodinamiki. Seriia Dinamika sploshnoi sredy. Sbornik nauchnykh trudov,* 1987, Vol.83, p.139-144, In Russian. 10 refs.
Kanivets, S.A.
Flood forecasting, Computerized simulation, Meltwater, Rivers.

42-3394
Testing a new breed of icebreaker.
Perchanok, M., *Canadian geographic,* June-July 1988, 108(3), p.66-71.
Icebreakers, Sea ice.

42-3395
Revealing review of icing accidents.
Lacagnina, M.M., *A.O.P.A. Pilot,* Jan. 1987, 30(1), p.90-92.
Aircraft icing, Accidents.

42-3396
Water hazards.
Lowery, J.M., *A.O.P.A. Pilot,* Oct. 1987, 30(10), p.85-91.
Aircraft landing areas, Tires, Water films.

42-3397
Wood-frame roofs and moisture.
Tobiasson, W., *Custom builder,* Mar. 1988, 3(3), MP 2340, p.33-37.
Roofs, Moisture, Wooden structures.

42-3398
Thawed strength of soil compacted while frozen: an introductory study.
Graham, J., et al, *Geotechnical testing journal,* June 1988, 11(2), p.125-131, 14 refs.
Fensury, H., Shields, D.H.
Earthwork, Frozen ground, Soil compaction, Soil strength.

42-3399
Friction on ice.
Ahagon, A., et al, *Rubber chemistry and technology,* Mar.-Apr. 1988, 61(1), p.14-35, 29 refs.
Kobayashi, T., Misawa, M.
Tires, Rubber ice friction.

42-3400
Protecting man-made shores from the forces of nature. *Alaskan update,* Fall 1983, 1(2), p.1-3.
Ice pileup, Ice override, Shore erosion, Countermeasures.

42-3401
Man-made ice for construction in the Arctic. *Alaskan update,* Spring 1986, 4(2), p.1-3, 6-7.
Artificial ice, Ice (construction material), Ice islands.

42-3402
Amoco spray ice island: a milestone in man-made ice construction. *Alaskan update,* Summer 1986, 4(3), p.1-3.
Artificial ice, Ice (construction material), Ice islands.

42-3403
Reindeer island ice road: a milestone in mand-made ice construction. *Alaskan update,* Summer 1986, 4(3), p.2,8.
Artificial ice, Ice (construction material), Ice roads.

42-3404
Second Union Oil ice island: a milestone in man-made ice construction. *Alaskan update,* Summer 1986, 4(3), p.3,7-8.
Artificial ice, Ice (construction material), Ice islands.

42-3405
Exxon ice island: a milestone in man-made ice construction. *Alaskan update,* Fall 1986, 4(4), p.6.
Artificial ice, Ice (construction material), Ice islands.

42-3406
Tests of sea ice samples from the Beaufort Sea aid design of offshore petroleum structures. *Alaskan update,* Spring 1987, 5(2), p.1-3,8.
Sea ice, Ice pressure, Ice strength, Offshore structures.

42-3407
Ice movement data needed for designing offshore structures. *Alaskan update,* Fall 1987, 5(4), p.1,6,8.
Sea ice, Drift, Ice pressure, Offshore structures.

42-3408
Laboratory testing of ice by the oil industry. *Alaskan update,* Winter 1987, 5(1), p.1-3,5.
Sea ice, Ice strength, Ice crystals, Laboratory techniques.

42-3409
Strength tests of sea ice samples from Alaska. *Alaskan update,* Winter 1987, 5(1), p.3.
Test equipment, Ice strength.

42-3410
Acetates clear the way for ice-free roads. *New scientist,* Jan. 21, 1988, 117(1596), p.37.
Chemical ice prevention, Road maintenance.

42-3411
Density of rime on cylinders.
Buser, O., et al, *Royal Meteorological Society. Quarterly journal,* Apr. 1973, 99(420), p.388-391, 7 refs.
Aufdermaur, A.N.
Icing, Ice density.

42-3412
Scientific cruise report of Arctic Expedition ARK IV/3.
Thiede, J., comp, *Berichte zur Polarforschung,* 1988, No.43, 237p. (Pertinent p.17-38), Refs. p.226-234.
Sea ice, Drift, Sediment transport, Arctic Ocean.

42-3413
Forecasting changes in natural conditions of the Ob'-Irtysh river basin after meliorative measures. [Prognoz izmeneniĭ prirodnykh usloviĭ Ob'-Irtyshskogo basseina v sviazi s meliorativnymi meropriiatiiami],
Snytko, V.A., et al, *Geografiia i prirodnye resursy,* Jan.-Mar. 1987, No.1, p.10-18, In Russian. 15 refs.
Taiga, Forest soils, Cryogenic soils, Swamps, Hydrology, Land reclamation.

42-3414
Annual course of thermal regime elements in shallow lakes of Central Yakutia. [Godovoĭ khod elementov teplovogo rezhima melkovodnogo ozera v Tsentral'noĭ IAkutii],
Pavlov, A.V., et al, *Geografiia i prirodnye resursy,* Jan.-Mar. 1987, No.1, p.91-97, In Russian. 16 refs.
Skriabin, P.N., Skachkov, IU.B., Varlamov, S.P.
Permafrost distribution, Permafrost beneath lakes, Taliks, Ground ice, Lake ice, Shoreline modification, Ice cover thickness, Snow cover effect, Water temperature.

42-3415
Thermokarst in the northern Amur region. [Termokarst Severnogo Priamur'ia],
Pozdniakov, I.V., *Geografiia i prirodnye resursy,* Jan.-Mar. 1987, No.1, p.97-101, In Russian. 17 refs.
Permafrost hydrology, Permafrost distribution, Ground ice, Active layer, Maps, Permafrost thermal properties, Thermokarst, Origin.

42-3416
Dynamics of the coastal zone of the Angara River water-storage basins at the low level regime. [Dinamika beregovoĭ zony angarskikh vodokhranilishch pri nizkom urovennom rezhime],
Leshchikov, F.N., *Geografiia i prirodnye resursy,* Jan.-Mar. 1987, No.1, p.101-107, In Russian. 3 refs.
Permafrost beneath lakes, Water storage, Reservoirs, Shore erosion, Shoreline modification, Ground ice, Ice melting.

42-3417
Temperature regime of soils in the Upper Kolyma light forests during spring. [Temperaturnyĭ rezhim pochv redkolesiĭ verkhov'ev Kolymy v vesennii period],
Alfimov, A.V., *Geografiia i prirodnye resursy,* Jan.-Mar. 1987, No.1, p.182-184, In Russian. 6 refs.
Permafrost beneath rivers, Permafrost distribution, Forest tundra, Forest soils, Cryogenic soils, Soil temperature, Mountain soils, Slope orientation.

42-3418
Heating panel of the sliding formwork. [Greiushchiĭ shchit skol'ziashcheĭ opalubki],
Pudikov, A.V., *Promyshlennoe stroitel'stvo,* Dec. 1986, No.12, p.42, In Russian.
Winter concreting, Concrete hardening, Frost resistance, Formwork (construction), Design.

42-3419
Ways of saving time and lowering power consumption in thermal curing of monolith concrete. [Puti sokrashcheniia prodolzhitel'nosti i snizheniia energoemkosti termoobrabotki monolitnogo betona],
Kopylov, V.D., et al, *Promyshlennoe stroitel'stvo,* Oct. 1986, No.10, p.39-40, In Russian. 1 ref.
Azimbaev, N.A.
Winter concreting, Permafrost beneath structures, Concrete placing, Concrete curing, Concrete heating, Electric heating, Concrete strength, Frost resistance.

42-3420
Formwork for thermal treatment of concrete. [Opalubka dlia termoobrabotki betona],
Danilov, N.N., et al, *Promyshlennoe stroitel'stvo,* Oct. 1986, No.10, p.40-42, In Russian. 3 refs.
Naumov, S.M., Zhuravlev, E.G.
Winter concreting, Formwork (construction), Concrete heating, Concrete hardening, Frost resistance.

42-3421
Diel patterns of photosynthate biosynthesis by phytoplankton in permanently ice-covered antarctic lakes under continuous sunlight.
Priscu, J.C., et al, *Journal of plankton research,* May 1988, 10(3), p.333-340, 17 refs.
Priscu, L.R., Howard-Williams, C., Vincent, W.F.
Limnology, Photosynthesis, Ice cover effect, Plankton, Antarctica—Vanda, Lake, Antarctica—Fryxell, Lake.
Diel patterns of photosynthate biosynthesis by antarctic freshwater phytoplankton growing under the variable but continuous sunlight of summer were found to be similar in many respects to those reported from other aquatic environments where light-/dark periods alternate. Lipid synthesis by freshwater phytoplankton in Lakes Vanda and Fryxell predominated during periods when solar radiation and photosynthesis were most intense; the inverse was generally true of the protein and polysaccharide fractions. The major photosynthetic end-products in both lakes were protein and polysaccharide, which together accounted for 60-81% of the total cellular carbon incorporation. Less than 4% of the carbon was incorporated into lipid in Lake Vanda; >12% appeared in the lipid fraction in Lake Fryxell. The Lake Fryxell populations showed evidence of photoinhibition of complete photosynthesis during 'midday' when irradiance was most intense. Values computed from the photosynthesis irradiance relationships in Lake Fryxell, corroborate other studies suggesting that the phytoplankton populations in permanently ice-capped antarctic lakes are among the most shade-adapted yet reported. (Auth.)

42-3422
Long term mitigation of frost deterioration of existing roadways.
Sage, J.D., et al, Worcester, MA, Worcester Polytechnic Institute, Mar. 25, 1988, 105p., 23 refs.
D'Andrea, R.
Roadbeds, Frost heave, Thaw weakening, Frost action, Pavements, Damage, Freeze thaw tests, Loads (forces), Soil freezing, Ground thawing, Shear strength.

42-3423
Mechanical properties of model ice rubble.
Sayed, M., Structures Congress '87 Related to Materials and Member Behavior, Orlando, FL, Aug. 17-20, 1987. Proceedings. Materials and member behavior. Edited by D.S. Ellifritt, New York, American Society of Civil Engineers, 1987, p.647-659, 6 refs.
Ice mechanics, Ice solid interface, Surface roughness, Stress strain diagrams, Tests, Ice cover.

42-3424
Ice winters 1981-1985 along the Finnish coast. [Jäätalvet 1981-1985 Suomen merialueilla],
Kalliosaari, S., et al, *Finnish marine research,* 1983, No.254, p.5-63, In Finnish with English summary.
Seinä, A.
Ice conditions, Sea ice distribution, Ice cover thickness, Ice formation, Ice breakup, Sea water freezing, Fast ice, Seasonal variations, Water temperature, Baltic Sea.

42-3425
WMO sea ice nomenclature (In Finnish). [WMO: N merijään terminologia (Suomi)],
Grönvall, H., et al, *Finnish marine research,* 1987, No.254, p.65-93, In Finnish and English.
Kalliosaari, S., Leppäranta, M., Seinä, A.
Sea ice, Terminology.

42-3426
Ice storage option.
Grumman, D.L., et al, *ASHRAE journal,* May 1988, 30(5), p.20-27.
Butkus, A.S., Jr.
Cold storage, Lake ice, Cooling systems, Cost analysis.

42-3427
Freezing in the hard core Yukawa fluid.
Kloczkowski, A., et al, *Journal of chemical physics,* May 1, 1988, 88(9), p.5834-5839, 50 refs.
Samborski, A.
Freezing, Phase transformations, Liquid solid interfaces, Liquid phases, Solid phases, Mathematical models, Theories, Density (mass/volume).

42-3428
Cross-polarization discrimination measurement at the CS-2 experimental earth station.
Maekawa, Y., et al, AP-S International Symposium Blacksburg, VA, June 15-19, 1987. Proceedings. 1987 International Symposium Digest: antennas and propagation, Vol.1, New York, Institute of Electrical and Electronic Engineers, 1987, p.444-447, 7 refs.
Chang, N.S., Miyazaki, A., Segawa, T.
Remote sensing, Snow melting, Ice crystals, Scattering, Raindrops.

42-3429
Composite buildings for military bases.
Flanders, S.N., *U.S. army Cold Regions Research and Engineering Laboratory,* Mar. 1988, CR 88-04, 25p., ADA-194 475, 4 refs.
Military facilities, Buildings, Safety, Cost analysis, Construction materials.
This report compares the use of composite buildings with the use of conventional buildings. Composite buildings are those that combine into fewer buildings several uses that traditionally have occurred in separate buildings. The comparisons are based on construction costs, life cycle costs, speed of construction, materials availability, energy efficiency, fire safety, organizational efficiency, incremental or modular construction, and habitability. The uses reported on include a military training facility in St. Jean, Quebec; a shopping and community center complex for Fort Wainwright, Alaska; and battalion and brigade buildings for mobilization at Fort Leonard Wood, Missouri, and in Alaska. In each case, when comparisons are made between permanently constructed buildings, the composite buildings are cheaper to build and maintain than the conventional buildings. The composite buildings consume less energy and are much more convenient to their occupants.

42-3430
Experience in lowering the power consumption of frozen ground excavation in meliorative works. [Opyt snizheniia energoemkosti razrabotki merzlykh gruntov v meliorativnom stroitel'stve],
Marakhovskiĭ, P.F., *Mekhanizatsiia stroitel'stva,* Feb. 1988, No.2, p.19-21, In Russian.
Earthwork, Land reclamation, Construction equipment, Cold weather construction, Frozen ground.

42-3431
Construction of ice crossing over the Long-Yuan River, designed for moving superheavy loads to the site of a 220 kV substation of the Nadym compressor station. [Opyt sooruzheniia ledianoĭ perepravy cherez r. Long-IUgan dlia propuska sverkhtiazhelykh gruzov pri stroitel'stve PS 220 kV KS Nadym],
Smirnov, V.N., et al, *Energeticheskoe stroitel'stvo,* Dec. 1987, No.12, p.60-63, In Russian. 4 refs.
Rudenko, N.D.
Swamps, Ice crossings, Design, Ice roads, Ice (construction material), Permafrost, River ice, Ice cover thickness.

42-3432
Design solutions for the overhead 110 kv line Yakutsk State Regional Electric Power Plant—Tabaga. [Proektnye resheniia VL 110 kv IAkutskaia GRES-Tabaga],
Volkov, A.N., *Energeticheskoe stroitel'stvo,* Dec. 1987, No.12, p.63-64, In Russian.
Permafrost beneath rivers, Floodplains, Power line supports, Foundations, Frozen fines, Permafrost thermal properties, USSR—Lena River.

42-3433
Using rolled concrete in the lower wedge of the dam of the Bureya hydroelectric power plant. [Primenenie ukatannogo betona v nizovom kline plotiny Bureĭskoĭ GES],
Loshak, V.K., et al, *Energeticheskoe stroitel'stvo,* Jan. 1988, No.1, p.12-17, In Russian. 3 refs.
Smirnova, L.N., Sokolov, V.V., Tarasov, IU.A.
Hydraulic structures, Dams, Winter concreting, Concrete strength, Frost resistance.

42-3434
Heating metallic formwork with a plastic conductive lining. [Greiushchaia metallicheskaia opalubka s polimernym elektroprovodnym pokrytiem],
Abramov, V.S., et al, *Promyshlennoe stroitel'stvo,* Feb. 1986, No.2, p.24-25, In Russian. 3 refs.
Ambartsumian, S.A., Badeian, G.V.
Winter concreting, Formwork (construction), Electric heating.

42-3435
Basic trends in the development of winter concreting technology. [Osnovnye napravleniia rezvitiia tekhnologii zimnikh betonnykh rabot],
Shishkin, V.V., *Promyshlennoe stroitel'stvo,* March, 1986, No.3, p.39-40 In Russian.
Reinforced concretes, Construction equipment, Winter concreting, Steel structures, Formwork (construction), Concrete heating.

42-3436
Winter concreting with the use of combined chemical admixtures. [Betonirovanie v zimnikh usloviiakh s primeneniem kompleksnykh khimicheskikh dobavok],
Ivanova, O.S., et al, *Promyshlennoe stroitel'stvo,* Dec. 1987, No.12, p.22-23, In Russian.
Sanitskiĭ, M.A., Shifko, O.IA.
Winter concreting, Concrete placing, Concrete admixtures, Frost resistance, Concrete strength, Concrete hardening, Concrete freezing.

42-3437
Swamp landscapes and ground water of the West Siberian plain. [Bolotnye landshafty i podzemnye vody Zapadno-Sibirskoĭ ravniny],
Kuskovskiĭ, V.S., et al, *Geografiia i prirodnye resursy,* Apr.-June 1987, No.2, p.34-40, In Russian. 21 refs.
Smolentsev, IU.K.
Swamps, Taliks, Ground water, Permafrost hydrology, Permafrost distribution, Taiga, Landscape types, Permafrost structure, Forest soils, Cryogenic soils.

42-3438
Man-induced eutrophication of the Far Northern lakes (causes, ecologic concequences and possible environmental protection). [Antropogennaia evtrofikatsiia ozer Kraĭnego Severa (prichiny, ekologicheskie posledstviia i vozmozhnye prirodookhrannye meropriiatiia)],
Vekhov, N.V., *Geografiia i prirodnye resursy,* Apr.-June 1987, No.2, p.87-93, In Russian. 34 refs.
Lake water, Permafrost beneath lakes, Water chemistry, Algae, Chemical composition, Water pollution, Human factors.

42-3439
Small-scale mapping of West Siberian swamps from satellite photographs. [Ispol'zovanie kosmicheskikh snimkov pri melkomasshtabnom kartirovanii bolot Zapadnoĭ Sibiri],
Gorozhankina, S.M., *Geografiia i prirodnye resursy,* Apr.-June 1987, No.2, p.141-146, In Russian. 8 refs.
Spaceborne photography, Swamps, Geobotanical interpretation, Permafrost distribution, Landscape types, Mapping.

42-3440
Man-induced activation of exogenic processes in the taiga zone of the West Siberian plain. [Antropogennaia aktivizatsiia eksogennykh protsessov taezhnoĭ zony Zapadno-Sibirskoĭ ravniny],
Evseeva, N.S., *Geografiia i prirodnye resursy,* July-Sep. 1987, No.3, p.62-67, In Russian. 20 refs.
Taiga, Human factors, Cryogenic soils, Forest soils, Forestry, Soil freezing, Frost penetration, Wind erosion, Forest fires, Revegetation.

42-3441
Cave-ins and talus processes of the Kodar Range. [Obval'no-osypnye protsessy v khrebte Kodar],
Chernyshov, N.I., *Geografiia i prirodnye resursy,* July-Sep. 1987, No.3, p.107-115, In Russian. 16 refs.
Alpine landscapes, Slope processes, Talus, Rock streams, Permafrost distribution, Solifluction.

42-3442
Classification and identification indices of polygonal swamps (the case of western Siberia). [O klassifikatsii i deshifrovochnykh priznakakh poligonal'nykh bolot (na primere Zapadnoĭ Sibiri)],
Novikov, S.M., et al, *Geografiia i prirodnye resursy,* July-Sep. 1987, No.3, p.131-138, In Russian. 11 refs.
Usova, L.I.
Subarctic landscapes, Tundra, Polygonal topography, Patterned ground, Swamps, Classifications, Microrelief.

42-3443
Microelement content in soil-forming rocks of northern Tyumen' region. [Soderzhanie mikroelementov v pochvoobrazuiushchikh porodakh severa Tiumenskoĭ oblasti],
Khrenov, V.IA., *Geografiia i prirodnye resursy,* July-Sep. 1987, No.3, p.163-165, In Russian. 12 refs.
Subpolar regions, Soil formation, Soil composition, Taiga, Soil chemistry, Microelement content.

42-3444
Evaluation of the Far North regions of the USSR for organizing the stations of background monitoring of natural media. [Otsenka raĭonov Kraĭnego Severa SSSR dlia organizatsii stantsiĭ fonovogo monitoringa prirodnoĭ sredy],
Krasovskaia, T.M., et al, *Geografiia i prirodnye resursy,* Oct.-Dec. 1987, No.4, p.44-48, In Russian. 10 refs.
Zaĭtseva, L.E., Tarasov, I.IU.
Shores, Landscape types, Tundra, Monitors, Human factors, Climatic factors, Geomorphology, Meteorology, Maps, Forest tundra.

42-3445
Landscape regionalization of the Priangar'ye according to facial structure of the territory. [Opyt landshaftnogo raĭonirovaniia Priangar'ia po fatsial'noĭ strukture territorii],
Suvorov, E.G., *Geografiia i prirodnye resursy,* Oct.-Dec. 1987, No.4, p.69-74, In Russian. 28 refs.
Maps, Permafrost beneath rivers, Landscape types, Mapping, USSR—Angara River.

42-3446
Classification of geocryologic-hydrogeologic conditions of the BAM zone in relation to ground water preservation. [Tipizatsiia merzlotno-gidrogeologicheskikh usloviĭ zony BAMa v sviazi s problemoĭ okhrany podzemnykh vod],
Alekseeva, L.P., *Geografiia i prirodnye resursy,* Oct.-Dec. 1987, No.4, p.89-97, In Russian. 12 refs.
Permafrost distribution, Permafrost hydrology, Human factors, Permafrost thermal properties, Water chemistry, Geologic structures, Profiles, Baykal Amur railroad.

42-3447
Theoretical and experimental study of propeller/ice interaction.
Nikitin, M.N., et al, ECTC Translation, No.T-856-05, New York, [1987], 4p., Unpublished manuscript.
For Russian original see 42-2051.
Pozniak, I.I., IAkonovskiĭ, S.V.
Icebreakers, Ice navigation, Propellers, Ships, Ice solid interface.

42-3448
To the problem of estimating the scale effect in modelling ice breaking by icebreakers.
Kashtelian, V.I., ECTC Translation, No.T-856-06, New York, [1987], 8p., 4 refs. Unpublished manuscript. For Russian original see 42-2052.
Ice breaking, Icebreakers, Models, Ice conditions.

42-3449
Modelled ice cover homogeneity estimation with regard to its strength.
Ionov, B.P., ECTC Translation, No.T-856-15, New York, [1987], 4p., 2 refs. Unpublished manuscript.
For Russian original see 42-2061.
Ice cover strength, Flexural strength, Elastic properties, Temperature effects, Mathematical models.

42-3450
DNAG No.3. Glaciomarine sedimentation on the continental slope off eastern Canada.
Piper, D.J.W., *Geoscience Canada,* Mar. 1988, 15(1), p.25-28, 34 refs.
Glacial deposits, Marine deposits, Quaternary deposits, Sedimentation, Stratigraphy, Ice sheets, Slopes, Ice edge, Shores, Canada.

42-3451
Glacial geologic and glacio-climatic studies in the Canadian High Arctic.
Bradley, R.S., ed, *Massachusetts. University. Dept. of Geology and Geography. Contribution,* July 1985, No.49, 271p., Refs. passim. For individual papers see 42-3452 through 42-3459.
Glacial geology, Glacial meteorology, Climatic factors, Quaternary deposits, Stratigraphy, Paleoclimatology, Snow cover effect.

42-3452
Glacial geology and Quaternary marine stratigraphy of the Robeson Channel area, northeastern Ellesmere Island, N.W.T., Canada.
Retelle, M.J., *Massachusetts. University. Dept. of Geology and Geography. Contribution,* July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.9-55, Refs. p.51-55.
Glacial deposits, Marine deposits, Glacier oscillation, Glaciation, Radioactive age determination, Paleoclimatology, Carbon isotopes, Canada—Northwest Territories—Ellesmere Island.

42-3453
Late Quaternary stratigraphy and paleoenvironments of the Beaufort lakes basin, northeastern Ellesmere Island.
Retelle, M.J., *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.57-106, Refs. 101-106.
Lacustrine deposits, Quaternary deposits, Paleoclimatology, Limnology, Ice conditions, Sediments, Stratigraphy, Grain size, Glacial deposits, Marine deposits, Canada—Northwest Territories—Ellesmere Island.

42-3454
Glacio-climatic studies of a high arctic plateau ice cap, part I: mass balance.
Bradley, R.S., et al, *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.107-127, 10 refs.
Serreze, M.C.
Glacier mass balance, Glacial meteorology, Snow depth, Climatic changes, Markers, Seasonal variations, Canada—Northwest Territories—Ellesmere Island.

42-3455
Glacio-climatic studies of high arctic plateau ice cap, part II: topoclimate.
Bradley, R.S., et al, *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.128-166, 16 refs.
Serreze, M.C.
Glacial meteorology, Albedo, Glacier ablation, Snow cover effect, Seasonal variations, Solar radiation, Tundra, Temperature gradients, Degree days, Canada—Northwest Territories—Ellesmere Island.

42-3456
Glacio-climatic studies of a high arctic plateau ice cap, part III: radiation climatology.
Serreze, M.C., et al, *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.167-194, 15 refs.
Bradley, R.S.
Glacial meteorology, Climatology, Solar radiation, Albedo, Cloud cover, Snow cover effect, Fog, Canada—Northwest Territories—Ellesmere Island.

42-3457
Glacio-climatic studies of a high arctic plateau ice cap, part IV: energy budget.
Serreze, M.C., et al, *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.195-216, 8 refs.
Bradley, R.S.
Glacier heat balance, Tundra, Snow cover effect, Analysis (mathematics), Latent heat, Diurnal variations, Glacial meteorology, Climatic factors, Canada—Northwest Territories—Ellesmere Island.

42-3458
Glacio-climatic studies of a high arctic plateau ice cap, part V: boundary layer conditions.
Palecki, M.A., et al, *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.217-249, 24 refs.
Serreze, M.C., Bradley, R.S.
Glacial meteorology, Boundary layer, Snow cover, Glacier mass balance, Measuring instruments, Meteorological data, Canada—Northwest Territories—Ellesmere Island.

42-3459
Aspects of the precipitation climatology of the Canadian High Arctic.
Bradley, R.S., et al, *Massachusetts. University. Dept. of Geology and Geography. Contribution*, July 1985, No.49, Glacial geologic and glacio-climatic studies in the Canadian High Arctic. edited by R.S. Bradley, p.250-271, 19 refs.
Eischeid, J.K.
Ice cores, Precipitation (meteorology), Climatology, Synoptic meteorology, Oxygen isotopes, Drill core analysis, Polar regions, Isotope analysis, Canada—Northwest Territories—Ellesmere Island.

42-3460
Ice in its different forms.
Berdnikov, D., *Canada. Transportation Development Centre. Translation*, [1983], No.860746 MF, 4p., Unpublished manuscript. For Russian original see 41-1399.
Ice conditions, Pressure ridges, Sea ice, River ice, Ice jams, Icebreakers, Ice pressure, Ice cover thickness.

42-3461
On the mechanics of the ramming interaction between a ship and a massive ice floe.
Riska, K., *Finland. Technical Research Centre. ublications*, 1987, No.43, 86p., 71 refs.
Icebreakers, Ice loads, Ice breaking, Ice floes, Ships, Mechanical properties, Models, Design.

42-3462
Techniques for measuring reservoir bank erosion.
Gatto, L.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1988, SR 88-03, 27p., ADA-191 400, Refs. p.23-27.
Banks (waterways), Shore erosion, Reservoirs, Lakes, Rivers, Sediments.
This report summarizes the processes that cause and conditions that contribute to bank erosion along reservoirs, lakes, rivers and coasts. It suggests measurements, techniques and measurement frequencies for four different levels of bank erosion study. Details on specific procedures for a particular technique must be obtained from references cited. There are neither standard measurements to make nor standard methods to use during erosion studies, but this report can be useful to investigators selecting an approach for future work.

42-3463
Twenty-eighth Soviet Antarctic Expedition. Studies of the 1982/83 season. [Dvadtsat' vos'maia Sovetskaia antarkticheskaia ekspeditsiia. Sezonnye issledovaniia 1982/83 g.],
Sovetskaia antarkticheskaia ekspeditsiia, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1987, Vol.82, 149p., In Russian. Refs. passim. For individual papers see 42-3464 through 42-3468, or E-37710, F-37704, F-37706-9, and I-37705.
Kornilov, N.A., ed.
Expeditions, Ice navigation, Polar regions.
This volume contains information on observations and results of scientific efforts carried out by the 28th Soviet Antarctic Expedition in the 1982-1983 season on the antarctic continent and surrounding waters. Seasonal activities and organization of the expedition, including logistic support and contact with non-Soviet expeditions, are outlined in the first part of the book. The second part consists of 7 individual papers giving the scientific results of projects in oceanography, glaciology and geophysics.

42-3464
Sea ice conditions for navigation of ships in the southern ocean and for unloading operations at antarctic stations. [Ledovaia obstanovka pri plavanii sudov v IUzhnom okeane i usloviia razgruzki v raionakh antarkticheskikh stantsii],
Kornilov, N.A., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1987, Vol.82, p.94-109, In Russian.
Kozlovskiĭ, A.M.
Sea ice distribution, Ice navigation, Unloading, Polar regions.
Navigation is described along the routes of expedition ships in the Weddell, Davis and Somov seas in 1982-1983. Also given is an account of the difficulties encountered during unloading operations at Soviet antarctic stations.

42-3465
Effects of currents on sea ice structure in the Mirnyy Station area. [Vliianie techeniĭ na uporiadochennost' struktury l'da v raĭone stantsii Mirnyĭ],
Strakhov, M.V., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1987, Vol.82, p.119-124, In Russian. 5 refs.
Fast ice, Crystal growth, Antarctica—Mirnyy Station.
Analysis of fast ice structure at Mirnyy Station shows a relationship between the strength of currents and the ice crystal growth. On the basis of this finding, it is possible to determine the flow of under-ice currents from the structure of the ice cover.

42-3466
Sea ice salinity and statistical characteristics of its distribution. [Solenost' antarkticheskogo morskogo l'da i nekotorye statisticheskie kharakteristiki ee raspredeleniia],
Nazintsev, IU.L., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1987, Vol.82, p.124-132, In Russian. 5 refs.
Romanov, A.A.
Sea ice, Ice salinity.
Salinity distribution in ice, in the process of ice formation and disintegration, is investigated, as are the methods best suited for the evaluation of salinity contents in the ice cover.

42-3467
Use of the international method of iceberg observation. [Opyt primeneniia mezhdunarodnoĭ metodiki za aĭsbergami],
Krivoshein, V.K., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1987, Vol.82, p.132-136, In Russian.
Khromov, IU.N.
Icebergs, Ice volume.
Presented is an analysis of data from investigations, using the method proposed by the Norwegian Polar Institute, of the distribution, occurrence, and dimensions of icebergs in the southern ocean. A chart showing iceberg distribution in Mar.-May 1983 is included, as are the tabulated data.

42-3468
Infrared radiometry of the southern ocean sea ice. [IK-radiometriia ledianogo pokrova IUzhnogo okeana],
Tarashkevich, V.N., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1987, Vol.82, p.137-140, In Russian. 4 refs.
Chebotareva, V.A.
Sea ice distribution, Radiometry.
Studies of sea ice distribution in the southern ocean show that data obtained by the use of radiometric equipment measuring ice thickness are more objective and more accurate than those obtained by visual evaluation.

42-3469
Biological significance of open water within the sea ice covers of the polar regions.
Massom, R.A., *Endeavour*, 1988, 12(1), p.21-27, 53 refs.
Polynyas, Biomass, Polar regions.
The popular concept of the sea ice of the Polar regions as unbroken areas of snow and ice is far from reality. There are in fact always considerable areas of open water, including some of considerable size which are normally to be found in the same place from year to year. The mapping of these areas has lately been much facilitated by remote sensing from polar orbiting satellites. This unusual ecological niche has been exploited by a specialized community of plants and animals. (Auth.)

42-3470
For a lead-temperature feedback in climatic variation.
Ledley, T.S., *Geophysical research letters*, Jan. 1988, 15(1), p.36-39, 9 refs.
Sea ice distribution, Ice models, Ice air interface, Polynyas.
Sea ice is an important factor in controlling the exchange of energy between the ocean and atmosphere in the polar regions and has an important impact on climate. A climate model has been developed which enables analysis of the effect of changes in sea ice on the ocean-atmosphere energy exchange and atmospheric temperature. The model results described here show that opening small areas of open ocean (leads) within the winter ice pack has a large impact on the atmospheric temperature of the polar regions. This effect is due to changes in the sensible heat flux between the surface and atmosphere resulting from leads. Thus leads within the ice pack may have significant impact on short and long term climatic variations. (Auth.)

42-3471
South Pole Station monitoring program. Procedure and results.
Lunsford, K.P., Port Hueneme, Naval Civil Engineering Laboratory, 1987, Var.p., Letter report. Unpublished manuscript. 4 refs. 4 appends. including a Survey Report by G.D. Lunsford.
Settlement (structural), Snowdrifts, Cold weather construction, Snow density, Snow accumulation, Snow cover effect, Polar regions, Antarctica—Amundsen-Scott Station.
The Naval Civil Engineering Laboratory has been monitoring, since 1984, the settlement of the Amundsen-Scott Station in order to predict the remaining useful life of the station. Factors which may be causing settlement of the dome have been established by examining the actual physical events, results of the finite element analysis, and results of the linear regression analysis. Settlement data shows the greatest amount of settlement is in the region of greatest snow cover. An explanation is developed by examining the effect of the drift snow on the compacted snow foundation of the dome. Due to the viscoelastic properties of snow, the load generated by the drift snow would be sufficient to accelerate the natural compaction of the snow foundation. It then follows, the base ring would be experiencing the most settlement in this region. Results of the finite element analysis evince the dome base ring can be exposed to twice the current differential settlement and still not buckle. Linear regression analysis calculates, that by 2002, sixty percent of the base ring footers will be experiencing twice their current differential settlement. At that level of settlement, there may be isolated buckling near the lower edge of the dome. Results of the finite element analysis and the linear regression analysis imply the dome will be structurally sound in 2002.

42-3472
University of Michigan: Sixth International Conference Structural Design of Asphalt Pavements. Proceedings, Volume 1.
International Conference ¡on the¡ Structural Design of Asphalt Pavements, 6th, Ann Arbor, MI, July 13-17, 1987, Ann Arbor, MI, University of Michigan, Jan. 1987, 1049p., Refs. passim. For selected papers see 42-3473 through 42-3475.
Bitumens, Pavements, Temperature effects, Meetings, Design, Cracking (fracturing).

42-3473
Influence of bitumen hardness on the fatigue behaviour of asphalt pavements of different thickness due to bearing capacity of subbase, traffic loading and temperature.
Arand, W., International Conference on the Structural design of Asphalt Pavements, 6th, Ann Arbor, MI, July 13-17, 1987. Proceedings. Vol.1, Ann Arbor, MI, University of Michigan, Jan. 1987, p.65-71, 5 refs.
Bitumens, Fatigue (materials), Pavement bases, Bearing strength, Temperature effects, Loads (forces).

42-3474
Prediction and prevention of surface cracking in asphaltic pavements.
Gerritsen, A.H., et al, International Conference on the Structural design of Asphalt Pavements, 6th, Ann Arbor, MI, July 13-17, 1987. Proceedings. Vol.1, Ann Arbor, MI, University of Michigan, Jan. 1987, p.378-391, 33 refs.
Bitumens, Pavements, Cracking (fracturing), Cold weather tests, Surface properties, Thermal stresses, Forecasting, Countermeasures.

42-3475
Low-temperature reflection cracking through asphalt overlays.
Joseph, P., et al, International Conference on the Structural design of Asphalt Pavements, 6th, Ann Arbor, MI, July 13-17, 1987. Proceedings. Vol.1, Ann Arbor, MI, University of Michigan, Jan. 1987, p.935-945, 22 refs.
Haas, R., Phang, W.A., Rothenburg, L.
Bitumens, Cracking (fracturing), Cold weather tests, Pavements, Construction materials, Thermal stresses, Surface properties.

42-3476
River ice processes.
Yapa, P.D., et al, Civil engineering practice, Vol.2: Hydraulics/mechanics. Edited by P.N. Cheremisinoff, N.P. Cheremisinoff and S.L. Cheng, Lancaster, PA, Technomic Publishing Co., Inc., 1988, p.469-492, 110 refs.
Shen, H.T.
River ice, Ice conditions, Heat transfer, Hydraulic structures, Ice jams, Ice navigation, Ice formation, Analysis (mathematics), Ice air interface.

42-3477
Ice Centre Environment Canada's use of AVHRR imagery past, present and future.
Henderson, D., North American NOAA Polar Orbiter Users Group First Meeting, Boulder, CO, July 14-16, 1987. Proceedings. Edited by D.A. Hastings, et al, Boulder, CO, U.S. NOAA National Geophysical Data Center, Dec. 1987, p.206-217, 12 refs.
Ice detection, Remote sensing, Sea ice distribution, Organizations, Canada.

42-3478
America's highways: accelerating the search for innovation. *National Research Council. Transportation Research Board. Special report,* 1984, No.202, 169p. (Pertinent p.132-146), Refs. passim. Edited by J.P. Starkey.
Road icing, Chemical ice prevention, Snow removal, Ice removal, Safety.

42-3479
Possibility of lowering the snow-load design values on the main structures of a thermo-electric power plant for reconstruction. ¡O vozmozhnosti snizheniia raschetnoĭ snegovoĭ nagruzki na glavnye korpusa TES pri rekonstruktsii¡,
Krylov, I.I., et al, *Energeticheskoe stroitel'stvo,* Apr. 1988, No.4, p.60-62, In Russian. 3 refs.
Ogryzko, IU.I., Terent'ev, G.D.
Industrial buildings, Snow loads, Ice loads, Design, Electric power.

42-3480
New norms and regulations for designing substations in remote northern regions. ¡Novyĭ normativnyĭ dokument po proektirovaniiu podstantsiĭ v severnykh trudnodostupnykh raĭonakh¡, *Energeticheskoe stroitel'stvo,* Apr. 1988, No.4, p.74-75, In Russian. 4 refs.
Electric power, Industrial buildings, Permafrost beneath structures.

42-3481
Trenching power shovel cutting out blocks of frozen ground. ¡Transheĭnyĭ ekskavator dlia vyrezaniia blokov merzlogo grunta¡,
Sokolov, L.K., et al, *Makhanizatsiia stroitel'stva,* Apr. 1988, No.4, p.19-20, In Russian.
Vereskun, A.S., Laptev, N.K.
Earthwork, Excavation, Design, Frozen ground.

42-3482
Organizing roadbed construction under difficult natural and climatic conditions. ¡Organizatsiia rabot po sooruzheniiu zemlianogo polotna v slozhnykh prirodno-klimaticheskikh usloviiakh¡,
Kozhevnikov, A.P., *Transportnoe stroitel'stvo,* Apr. 1988, No.4, p.7-8, In Russian.
Roadbeds, Earthwork, Embankments, Permafrost beneath structures, Railroads, Roads.

42-3483
Geo-textile sheets. ¡Geotekstil'nye polotna¡,
Bulgakov, M.P., *Transportnoe stroitel'stvo,* Apr. 1988, No.4, p.10, In Russian.
Polymers, Soil creep, Slope stability, Soil stabilization, Grasses, Slope processes, Countermeasures, Construction materials.

42-3484
Technology of making concretes with antifreeze admixtures. ¡Tekhnologiia prigotovleniia betona s protivomoroznymi dobavkami¡,
Safonov, B.S., et al, *Transportnoe stroitel'stvo,* Apr. 1988, No.4, p.27-29, In Russian.
Concrete freezing, Concrete strength, Concrete admixtures, Frost resistance, Cements.

42-3485
Calculating stress-strain state and consolidation of thawing ground. ¡Raschet napriazhenno-deformirovannogo sostoianiia i konsolidatsii ottaivaiushchego gruntovogo massiva¡,
Shvakov, V.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenĭ. Stroitel'stvo i arkhitektura,* 1988, No.2, p.119-123, In Russian. 6 refs.
Plastic flow, Ground thawing, Soil freezing, Frost penetration, Frost heave, Mathematical models.

42-3486
Influence of testing conditions on frost resistance of heavy concrete. ¡Vliianie uslovĭĭ ispytaniĭ na morozostoĭkost' tiazhelogo betona¡,
Samarin, IU.A., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenĭ. Stroitel'stvo i arkhitektura,* 1988, No.3, p.58-62, In Russian. 5 refs.
Orlov, M.T., Stopich, S.I.
Tests, Concrete structures, Permafrost beneath structures, Concrete freezing, Frost resistance.

42-3487
Basic principles of soil stabilization. ¡Osnovnye printsipy ukrepleniia gruntov¡,
Bezruk, V.M., Moscow, Transport, 1987, 32p., In Russian with English table of contents enclosed. 4 refs.
Pavement bases, Soil stabilization, Cements, Soil cement, Bitumens, Resins, Fines, Sands, Clays, Loams, Pavements.

42-3488
Advanced construction methods in western Siberia. ¡Progressivnye metody stroitel'stva v Zapadnoĭ Sibiri¡,
Kuramin, V.P., Moscow, Nedra, 1987, 112p., In Russian with abridged English table of contents enclosed.
Heating, Construction materials, Cold weather construction, Transportation, Site accessibility, Construction equipment, Modular construction, Air cushion vehicles, Foundations, Site surveys, Pipelines.

42-3489
Frost heave of ground in foundation design of structures. ¡Moroznoe puchenie gruntov v raschetakh osnovaniĭ sooruzheniĭ¡,
Orlov, V.O., et al, Novosibirsk, Nauka, 1987, 136p., In Russian with abridged English table of contents enclosed. Refs. p.130-134.
Elgin, B.B., Zheleznak, I.I.
Foundations, Soil freezing, Seasonal freeze thaw, Frost heave, Countermeasures, Design.

42-3490
Bridge construction. ¡Stroitel'stvo mostov¡,
Bobrikov, B.V., et al, Moscow, Transport, 1987, 304p. (Pertinent p. 77-82), In Russian with abridged English table of contents enclosed. 21 refs.
Rusakov, I.M., Tsar'kov, A.A.
Permafrost control, Cold weather construction, Thermopiles, Soil freezing, Frost penetration, Railroads, Bridges, Piers, Foundations, Permafrost beneath structures, Baykal Amur railroad.

42-3491
Heat transfer in thermosiphons.
Utkin, V.B., *Heat transfer—Soviet research,* Jan.-Feb. 1983, 15(1), p.19-23, Translated from Raschet teplomassoobmena v energokhimicheskikh protsessakh, 1981, p.59-63. 19 refs.
Heat flux, Thermopiles, Design, Performance.

42-3492
Maximum heat transfer capability of two-phase thermosiphons.
Pioro, I.L., *Heat transfer—Soviet research,* Jan.-Feb. 1983, 15(1), p.24-31, Translated from Promyshlennaia teplotekhnika, 1982, 4(4) p.25-30. 23 refs.
Thermopiles, Performance, Heat transfer, Analysis (mathematics).

42-3493
Maximum heat transfer in thermosiphons with separated uptake and downtake flows.
Bezrodnyĭ, M.K., et al, *Heat transfer—Soviet research,* Mar.-Apr. 1983, 15(2), p.108-114, Translated from Energetika, 1982, No.12, p.40-45. 6 refs.
Volkov, S.S., Alekseenko, D.V.
Thermopiles, Performance, Heat flux, Design.

42-3494
Calibration of thermoelectric heat flux probes for low-temperature measurements.
Khuchua, R.S., et al, *Heat transfer—Soviet research,* Jan.-Feb. 1984, 16(1), p.117-121, Translated from Promyshlennaia teplotekhnika, 1984, 6(6) p.60-63. 8 refs.
Safonov, V.S., Pakhomov, V.N.
Calorimeters, Heat flux, Probes, Low temperature research.

42-3495
Sal'nye Tundry zone of the Lapland granulite belt. ¡Sal'notundrovskaia zona Laplandskogo granulitovogo poiasa¡,
Kozlov, N.E., et al, *Akademiia nauk SSSR. Doklady,* 1988, Vol.298(6), p.1442-1445, In Russian. 5 refs.
Ivanov, A.A., Nerovich, L.I.
Soil formation, Soil composition, Tundra, Cryogenic soils, Origin, Erosion.

42-3496
Karst gypsum caves on the Vilyuy River (Yakutia). ¡Karstovye peshchery v gipsakh na r. Viliuĭ (IAkutiia)¡,
Filippov, A.G., *Akademiia nauk SSSR. Doklady,* 1988, Vol.299(3), p.696-701, In Russian. 1 ref.
Caves, Permafrost distribution, Karst, Permafrost thickness, Ground ice, Permafrost structure, Thermokarst.

42-3497
Ways of improving transport construction. ¡Puti sovershenstvovaniia transportnogo stroitel'stva¡,
Kantorovich, L.V., ed, Moscow, Nauka, 1987, 142p., In Russian. For selected papers see 42-3498 and 42-3499. 7 refs.
Pereselenkov, G.S., ed.
Ports, Railroads, Cold weather construction, Permafrost beneath rivers, Winter maintenance, Ice cover thickness, Ice jams, Cost analysis, Baykal Amur railroad, Taiga, Swamps, Mountains, Rivers.

42-3498
Railroads in regions of new economic development. ¡Zheleznye dorogi v raĭonakh novogo ekonomicheskogo osvoeniia¡,
Zakharov, V.A., et al, Puti sovershenstvovaniia transportnogo stroitel'stva (Ways of improving transport construction) edited by L.V. Kantorovich and G.S. Pereselenkov, Moscow, Nauka, 1987, p.79-83, In Russian. 7 refs.
Kosmin, V.V.
Cold weather construction, Cost analysis, Subgrades, Railroad tracks, Baykal Amur railroad, Taiga, Paludification, Mountains.

42-3499
River ports in the areas of new petroleum activities in northern Siberia. [Rechnye porty vo vnov' osvaivaemykh neftegazonosnykh raionakh severa Sibiri],
Gurevich, V.B., Puti sovershenstvovaniia transportnogo stroitel'stva (Ways of improving transport construction) edited by L.V. Kantorovich and G.S. Pereselenkov, Moscow, Nauka, 1987, p.84-86, In Russian.
Rivers, Ice breakup, Ice jams, Transportation, Ports, Permafrost beneath structures, Ice navigation, Ice cover thickness.

42-3500
Arctic supply vessel *Vitus Bering*, with supplement The multipurpose Arctic supply vessel *Alexei Chirikov*. [Sudno snabzheniia dlia Arktiki "Vitus Bering" s pril. "Universal'nyi arkticheskii snabzhenets Alekseĭ Chirikov"],
Kosovskiĭ, S.B., et al, *Sudostroenie*, May 1988, No.5, p.3-6, In Russian.
Karmanov, A.A.
Ships, Marine transportation, Cargo, Ice conditions, Ice navigation, Ports, Fast ice, Icebreakers, Rivers, Ice breaking.

42-3501
Ice-breaking fleet: service and stimulus. [Ledokol'nyĭ flot: uslugi i stimuly],
Plotnikov, K., *Morskoĭ flot*, 1987, No.8, p.5-7, In Russian.
Cost analysis, Ice navigation, Icebreakers, Ships, Cargo.

42-3502
***Sadko* goes to the ice covered sea.** ["Sadko" idet vo l'dy],
Popov, S., *Morskoĭ flot*, 1987, No.8, p.12-14, In Russian.
Ice navigation, Icebreakers, Ice cover thickness, Ice breaking.

42-3503
Systematic approach to the ice casualty rate. [K ledovoĭ avarĭinosti—sistemnyĭ podkhod],
Arikaĭnen, A., *Morskoĭ flot*, 1987, No.8, p.20-23, In Russian.
Safety, Ice navigation, Icebreakers, Ships, Ice cover thickness, Ice breaking.

42-3504
Atomic icebreaker *Taymyr*. [Atomnyĭ ledokol "Taĭmyr"],
Okol'nichnikov, A., et al, *Morskoĭ flot*, 1987, No.8, p.42-49, In Russian.
Khudin, V.
Ice navigation, Icebreakers, Design.

42-3505
What will be the icebreaker of the future. [Kakim byt' ledokolu budushchego],
Arikaĭnen, A., *Morskoĭ flot*, 1988, No.4, p.33-36, In Russian.
Icebreakers, Ice navigation, Design, Ships.

42-3506
Evaluating the thermal state of valley soils in the lower course of Ob', Irtysh and Tobol rivers. [Otsenka teplovogo sostoianiia pochv dolin nizhnego techeniia Obi, Irtysha i Tobola],
Trofimova, I.E., *Geografiia i prirodnye resursy*, Apr.-June 1988, No.2, p.76-85, In Russian. 5 refs.
Valleys, Soil temperature, Cryogenic soils, Snow cover effect, Solar radiation, Taiga, River basins.

42-3507
Regionalization of the Irkutsk area for technical purposes according to thermal conditions of winter periods. [Raionirovanie Irkutskoĭ oblasti dlia tekhnicheskikh tseleĭ po termicheskim usloviiam zimnego perioda],
Sorokina, L.P., *Geografiia i prirodnye resursy*, Apr.-June 1988, No.2, p.85-90, In Russian. 10 refs.
Urban planning, Construction materials, Construction equipment, Frost action, Corrosion, Cold weather performance, Cold weather operation.

42-3508
Natural revegetation of the cotton-grass hummocky tundra of Chukotskiy Peninsula after fires. [Estestvennoe vosstanovlenie pushitsevo-kochkarnikovoĭ tundry Chukotki posle pozharov],
Ignatenko, I.V., et al, *Geografiia i prirodnye resursy*, Apr.-June 1988, No.2, p.99-108, In Russian. 18 refs.
Pavlov, B.A.
Tundra, Forest fires, Grasses, Revegetation, Cryogenic soils.

42-3509
New snow gauge using an electric balance.
Konishi, H., et al, *Seppyo*, Mar. 1986, 63(3), p.3-7, In Japanese with English summary. 3 refs.
Endoh, T., Wakahama, G.
Precipitation gages.

42-3510
Creation of an artificial permafrost.
Sawada, S., *Seppyo*, Mar. 1986, 63(3), p.9-15, In Japanese with English summary. 6 refs.
Soil freezing, Artificial freezing, Permafrost preservation.

42-3511
Parameterizations of thermal conduction, water-vapor transport and flow-down speed of melt water in snow cover.
Kondo, J., *Seppyo*, Mar. 1986, 63(3), p.17-24, In Japanese with English summary. 14 refs.
Snow permeability, Meltwater, Seepage, Snow thermal properties, Snowmelt.

42-3512
Deformation behavior and mechanical properties of frozen soil in bending test.
Izuta, H., et al, *Seppyo*, Mar. 1986, 63(3), p.25-32, In Japanese with English summary. 11 refs.
Ohrai, T., Yamamoto, H.
Frozen ground mechanics, Flexural strength, Deformation.

42-3513
Determination of roughness coefficients for ice-covered rivers by means of direct measurements of velocity distribution.
Majewski, W., et al, International Symposium on Measuring Techniques in Hydraulic Research, Delft, Netherlands, Apr. 22-24, 1985. Proceedings. Edited by A.C.E. Wessels, Rotterdam, International Association for Hydraulic Research, 1986, p.237-252, 9 refs.
Bagińska, M., Walczak, P.
DLC TC177.I59 1985
Icebound rivers, Ice bottom surface, River flow, Roughness coefficient.

42-3514
1987-88 Australian antarctic research program.
Australia. Antarctic Division, [Kingston, Tasmania, 1987], 180p., Refs. passim., For selected individual reports see 42-3515 through 42-3517 or B-37722-26, E-37721, F-37717-19, H-37720 and K-37727-29.
Research projects, Ice.
Brief summaries of planned activities are provided for the Australian programs in earth sciences, environmental studies, glaciology, human biology and medicine, life sciences, meteorology, oceanography, physics, and social sciences. Each summary shows, with variations, title, PI with affiliation, location, of the research site, project number, aim of the research, work proposed/accomplished, and the significance of the work. Following the summaries are lists showing research programs by areas: Casey, Commonwealth Bay, Prydz Bay, Macquarie Island, Mawson, Heard Island, and shipboard research. The report closes with a list of PIs names and addresses.

42-3515
Stability, glaciological and depositional conditions of the continental ice sheet edge at Vestfold Hills.
Calhoun, E.A., et al, 1986-87 Australian antarctic research program, [Kingston, Tasmania, Antarctic Division, 1987], p.8-12, 3 refs.
Fitzsimons, S.J., Payne, R.R.
Ice creep, Ice deformation, Lichens, Antarctica—Vestfold Hills.
There are two main ways that the state of a continental ice sheet can be assessed: (1) by long term monitoring, and (2) by inference from (a) the nature of weathering of the adjacent rock, (b) the size and number of lichen colonies adjacent to the ice edge, (c) examination of the character of ice edge deposits, (d) examination of the nature of eroded rock surfaces and (e) examinations of the form of the ice edge and deformational structures in the marginal ice and adjacent snow wedge. A model has been developed based on the type of observation indicated in 2(e) which permits the status of advance, stability and retreat to be judged. (Auth.)

42-3516
Deep ice core drilling on Law Dome.
Morgan, V.I., et al, 1986-87 Australian antarctic research program, [Kingston, Tasmania, Antarctic Division, 1987], p.52-54.
Etheridge, D.
Ice cores, Drilling, Drill core analysis, Antarctica—Law Dome.
Palaeo-environmental records which make use of the chronological deposition of ice layers as a data store will be investigated by analysis of the ice cores. Conditions at the Law Dome Summit site mean that annual variations of various parameters in the ice can be detected to allow the age of the ice at depth to be accurately determined by counting the annual cycles. It is expected that this project will produce a core covering a time span of about 20,000 years with precise dating able to be extended back some 9,000 years before the ice flow distorts the layers enough to prevent counting. Data is obtained by accurately mapping the borehole soon after drilling is completed and then remeasuring several years later. Ice temperatures will also be measured in the borehole and the ice crystal structure, which influences the ice flow but is itself developed by previous flow history of the ice, will be investigated by measurement in the cores. (Auth.)

42-3517
Properties and structure of antarctic snow and ice.
Young, N.W., 1986-87 Australian antarctic research program, [Kingston, Tasmania, Antarctic Division, 1987], p.58-60.
Snow physics, Snow cover structure, Ice physics, Ice structure, Antarctica—Law Dome.
The aims of the study are defined as follows: to map the distribution of surface snow properties covering the full range of glaciological and climatic conditions found on Law Dome and reconstruct a history of changes in surface conditions; to determine the rates of densification and crystal growth in the snow cover, their interrelation and effect of melting on these and use these characteristics to establish a chronology for firn cores from other sites; to map the internal crystal structure of the Law Dome ice cap from measurements on deep ice cores and determine its relationship with the flow of the ice cap. (Auth.)

42-3518
Solar radiation transmitted to the ground through cloud in relation to surface albedo.
Gardiner, B.G., *Journal of geophysical research*, Apr. 20, 1987, 92(D4), p.4010-4018, 43 refs.
DLC QC811.J6
Albedo, Solar radiation, Sea ice distribution, Ice models, Clouds (meteorology), Antarctica—Faraday Station.
The global solar radiation received at the earth's surface in the presence of cloud depends not only on the optical depth of the cloud and its other physical properties, but also on the albedo of the underlying surface. Multiple reflection of radiation between the cloud and a snow-covered surface, mainly in the visible spectrum, can increase the measured global solar radiation by a factor of 2 or more in overcast conditions. Measurements made at an Antarctic offshore station (65S, 64W) are compared during two periods of extreme surface albedo (open water and fast ice surrounding the island station) and demonstrate that the effect increases, in amplitude and variability, with increasing cloud cover. The extreme cases are reconciled by a relatively simple numerical model, of general applicability, in which partial cloud cover is parameterized by sunshine duration. Absorption in the cloud and the effect of local land surfaces are taken into account. The model is applied predictively to sunshine and visual sea ice data throughout a 2-year period and successfully simulates the measured values of global solar radiation over a wide range of cloud and sea ice cover, enabling the irradiance for any value of surface albedo to be inferred. (Auth.)

42-3519
Recommendations for the foundation design of mobile (modular) buildings on permafrost. [Rekomendatsii po proektirovaniiu fundamentov mobil'nykh (inventarnykh) zdaniĭ na vechnomerzlykh gruntakh],
Dokuchaev, V.V., ed, Moscow, Stroĭizdat, 1988, 112p., In Russian.
Gerasimov, A.S., ed.
Modular construction, Permafrost beneath structures, Site surveys, Foundations, Active layer, Seasonal freeze thaw, Pile structures, Frost heave.

42-3520
Improving the microclimate of courtyards in groups of residential buildings in Siberian towns. [Sovershenstvovanie mikroklimata dvorovykh prostranstv grupp zhilykh zdaniĭ v gorodakh Sibiri],
Dediukhin, V.F., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1987, No.12, p.38-43, In Russian. 6 refs.
IAkovlev, N.A.
Solar radiation, Residential buildings, Wind factors, Microclimatology, Ventilation, Subarctic landscapes.

42-3521
Regionalization for planning and upbuilding settlements for conditions of the Yakut ASSR. [Proektnostroitel'noe raionirovanie kak metodicheskaia osnova proektirovaniia zdaniĭ i zastroĭki naselennykh mest (primenitel'no k usloviiam IAkutskoĭ ASSR)],
Novotel'nova, Z.G., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1987, No.12, p.44-48, In Russian. 3 refs.
Urban planning, Subpolar regions.

42-3522
Structure and frost resistance of concretes containing multiple admixtures. [Struktura i morozostoikost' betonov s kompleksnymi dobavkami],
Nizhevisov, V.V., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1987, No.12, p.62-64, In Russian.
Shadrin, V.V.
Winter concreting, Concrete aggregates, Cements, Concrete admixtures, Concrete strength, Frost resistance.

42-3523
Calculating the electric field parameters for electric heating of concrete and its mixtures. [Raschet parametrov elektricheskogo polia pri elektroprogreve betona i elektrorazogreve betonnoi smesi],
Zubkov, V.I., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1987, No.12, p.113-118, In Russian. 5 refs.
Winter concreting, Concrete heating, Concrete aggregates, Electric heating, Mathematical models.

42-3524
Evaluating the effectiveness of fills beneath foundations built on seasonally freezing-thawing frost-heaving ground. [Ob otsenke effektivnosti podsypok pod fundamenty v usloviiakh sezonnogo promerzaniia-ottaivaniia puchinistykh gruntov],
Orlov, V.O., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1987, No.12, p.118-120, In Russian. 3 refs.
Babello, V.A., Zhuravlev, N.A.
Foundations, Earth fills, Sands, Frost heave, Seasonal freeze thaw, Buildings.

42-3525
Superblocks: yesterday, today, tomorrow (interview). [Superbloki: vchera, segodnia, zavtra (nashi interv'iu)],
Shishkin, E.P., et al, *Stroitel'stvo truboprovodov*, Feb. 1988, No.2, p.4-5, In Russian.
Grishin, A.A.
Foundations, Permafrost beneath structures, Modular construction, Prefabrication, Construction materials, Petroleum industry, Buildings, USSR—Yamburg.

42-3526
Yamal Peninsula and its problems. [IAmal i ego problemy],
Veselyi, N.N., *Stroitel'stvo truboprovodov*, Feb. 1988, No.2, p.6-9, In Russian.
Foundations, Permafrost distribution, Piles, Permafrost depth, Permafrost beneath structures, Buildings, Petroleum industry.

42-3527
Fastening gas pipelines by freezing the anchors into permafrost. [Zakreplenie gazoprovodov na vechnoi merzlote pri pomoshchi vmorazhivaemykh ankernykh ustroistv],
Borodavkin, P.P., et al, *Stroitel'stvo truboprovodov*, Feb. 1988, No.2, p.14-17, In Russian.
Shcherbakov, S.M.
Gas pipelines, Foundations, Anchors, Permafrost beneath structures.

42-3528
Corrosive action of ground and natural water in Yamal Peninsula. [Korrozionnaia aktivnost' gruntov i prirodnykh vod IAmala],
Polozov, A.E., et al, *Stroitel'stvo truboprovodov*, Feb. 1988, No.2, p.20-21, In Russian.
Sanzharovskaia, S.F., Voltsekhovskaia, L.N.
Gas pipelines, Permafrost beneath structures, Foundations, Concretes, Steel structures, Ground water, Water chemistry, Corrosion, Buildings, Petroleum industry, USSR—Tyumen'.

42-3529
Investigation of the state of earth dams and fills on Arctic shores. [Obsledovanie sostoianiia nasypei i podsypok na Arkticheskom poberezh'e],
Konstantinov, I.P., et al, *Stroitel'stvo truboprovodov*, Feb. 1988, No.2, p.21-23, In Russian.
Grigor'ev, N.F.
Shores, Drilling, Roads, Earth dams, Rock fills, Foundations, Earth fills, Permafrost hydrology, Permafrost beneath structures, Frost heave, Tundra, Geocryology.

42-3530
Engineering-geocryological aspects of improving technology of pipeline construction in the North. [Inzhenerno-geokriologicheskie aspekty sovershenstvovaniia tekhnologii stroitel'stva truboprovodov na Severe],
Koval'kov, V.P., et al, *Stroitel'stvo truboprovodov*, Feb. 1988, No.2, p.25-26, In Russian.
Novikov, I.P.
Frozen fines, Permafrost structure, Hydrothermal processes, Gas pipelines, Permafrost control.

42-3531
Results of experimental studies of solifluction. [Nekotorye rezul'taty eksperimenral'nogo issledovaniia defliuktsii],
Gabrielian, G.K., *Geomorfologiia*, Jan.-Mar. 1988, No.1, p.48-51, In Russian with English summary. 7 refs.
Slope processes, Soil creep, Alpine landscapes, Soil temperature, Freeze thaw cycles, Solifluction.

42-3532
Global satellite communication systems for reporting, search and rescue operations at sea. [Global'nye sputnikovye sistemy sviazi, opoveshcheniia, poiska i spasaniia na more],
Peresypkin, V.I., ed, Leningrad, Transport, 1987, 108p., In Russian. For selected papers see 42-3533 through 42-3535 or G-37737-38.
Ice reporting, Ice navigation, Airborne radar, Data processing, Spacecraft, Cost analysis, Icebreakers, Ice conditions, Spaceborne photography, Ice surveys, Ice cover thickness.
The book deals with economic, technical and operational aspects of the use of satellite communication systems for, among others, ice surveys, ice navigation, search and rescue at sea, spaceborne photography, and ship to station meteorological and hydrological information transmission.

42-3533
Estimating the usefulness of spaceborne ice-survey information. [Otsenka poleznosti sputnikovoi ledovoi informatsii],
Likhachev, A.V., Global'nye sputnikovye sistemy sviazi, opoveshcheniia, poiska i spasaniia na more (Global satellite communication systems for reporting, search and rescue operations at sea) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.47-54, In Russian. 8 refs.
Ice reporting, Ice navigation, Icebreakers, Ice conditions, Ice surveys, Ice cover thickness.

42-3534
Efficiency of spaceborne ice surveys. Economic analysis. [Otsenka ekonomicheskoi effektivnosti sputnikovoi ledovoi razvedki],
Mikhailova, S.A., Global'nye sputnikovye sistemy sviazi, opoveshcheniia, poiska i spasaniia na more (Global satellite communication systems for reporting, search and rescue operations at sea) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.54-58, In Russian. 2 refs.
Ice reporting, Spaceborne photography, Cost analysis, Ice navigation, Ice surveys.

42-3535
Television techniques of depicting satellite information on ice conditions. [Televizionnye metody otobrazheniia sputnikovoi ledovoi informatsii],
Likhachev, A.V., et al, Global'nye sputnikovye sistemy sviazi, opoveshcheniia, poiska i spasaniia na more (Global satellite communication systems for reporting, search and rescue operations at sea) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.102-107, In Russian. 6 refs.
Shcheglov, V.P.
Ice navigation, Ice reporting, Spaceborne photography, Ice conditions, Icebreakers.

42-3536
Rational design of sludge freezing beds.
Martel, C.J., MP 2343, 1988 Joint CSCE-ASCE National Conference on Environmental Engineering, Vancouver, B.C., July 13-15, 1988. Proceedings. Edited by S.C. Liptak, J.W. Atwater and D.S. Mavinic, Montreal, Quebec, Canadian Society for Civil Engineering, 1988, p.575-581, 6 refs.
Sludges, Waste treatment, Water treatment, Freezing, Freeze thaw cycles, Ice crystal formation, Impurities.
A new unit operation for sludge dewatering called a freezing bed is described. This operation uses the natural seasonal temperature changes in cold regions to freeze and thaw the sludge. Equations for predicting the design depth of the bed are presented along with an example of how they can be used.

42-3537
Secondary effluent disposal through snowmaking.
Rabinowitz, B., et al, 1988 Joint CSCE-ASCE National Conference on Environmental Engineering, Vancouver, B.C., July 13-15, 1988. Proceedings. Edited by S.C. Liptak, J.W. Atwater and D.S. Mavinic, Montreal, Quebec, Canadian Society for Civil Engineering, 1988, p.736-744, 4 refs.
Water treatment, Waste disposal, Waste treatment, Snow cover effect, Snow density, Irrigation, Meltwater, Snow manufacturing.

42-3538
Port and ocean engineering under Arctic conditions, Vol.1.
International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987, Fairbanks, University of Alaska, Geophysical Institute, 1988, 736p., Refs. passim. For individual papers see 42-3539 through 42-3601.
Sackinger, W.M., ed, Jeffries, M.O., ed.
Ice navigation, Offshore structures, Ice loads, Ice physics, Meetings, Ice solid interface, Icebreakers, Construction materials, Engineering.

42-3539
Uniaxial and biaxial compressive strength of ice sampled from multi-year pressure ridges.
Hausler, F.U., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.1-11, 12 refs.
Earle, E.N., Gerchow, P.
Ice strength, Pressure ridges, Compressive properties, Ice physics, Stresses, Tests.

42-3540
Time-series variations in ice crushing.
Timco, G.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.13-20, 15 refs.
Jordaan, I.J.
Ice breaking, Loads (forces), Offshore structures, Ice mechanics, Ice loads, Dynamic loads, Time factor.

42-3541
Applicability of LEFM and the fracture toughness (KIC) to sea ice.
Tuhkuri, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.21-32, 25 refs.
Ice cracks, Fracturing, Ice elasticity, Ice loads, Sea ice, Stresses, Experimentation, Ice cracks, Flexural strength.

42-3542
Creep process and rupture characteristics of sea ice in the Bohai Sea.
Li, Z., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.33-38, 5 refs.
Li, F., Sui, J.
Ice creep, Ice cracks, Strains, Fracturing, Compressive properties, Rheology, Loads (forces), Brines, Ice salinity.

42-3543
Study of the flexural strength and elastic modulus of sea ice in the Bohai Sea.
Sui, J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.39-44, 6 refs.
Ice strength, Flexural strength, Ice elasticity, Brines, Sea ice, Tests, Ice temperature, Loads (forces).

42-3544
Studies on adhesion strength of saline ice.
Makkonen, L., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.45-55, 36 refs.
Lehmus, E.
Ice adhesion, Ice salinity, Ice solid interface, Shear strength, Brines, Tests, Ice removal, Offshore structures.

42-3545
Some physical properties of multiyear landfast sea ice, northern Ellesmere Island, Canada.
Jeffries, M.O., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.57-68, 14 refs.
Sackinger, W.M., Shoemaker, H.D.
Ice physics, Sea ice, Fast ice, Ice cover thickness, Calving, Ice shelves, Ice salinity, Ice temperature.

42-3546
Geometry and physical properties of ice islands.
Jeffries, M.O., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.69-83, 31 refs.
Sackinger, W.M., Shoemaker, H.D.
Ice islands, Ice physics, Offshore structures, Drift, Ice mechanics, Ice volume.

42-3547
New look at sea ice thickness.
Colony, R., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.85-93, 8 refs.
Ice cover thickness, Sea ice, Analysis (mathematics), Beaufort Sea.

42-3548
Use of polysulphide rubber moulds to measure ice roughness.
Goodman, R.H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.95-102, 14 refs.
Ice surface, Surface roughness, Sea ice, Ice water interface, Ice bottom surface, Measurement.

42-3549
Alaska SAR facility.
Weeks, W.F., et al, MP 2344, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.103-110, 16 refs.
Ice water interface, Remote sensing, Drift, Airborne radar, Ice mechanics, Sea ice.
A short description is given of the general characteristics of the ice/ocean and applications demonstrations research programs that are anticipated as part of the Alaskan SAR Facility (ASF) program. Also described are the characteristics of the three satellite SAR (Synthetic Aperture Radar) systems that will supply data to the ASF and the design and analysis capabilities of the different components of the ground station.

42-3550
Airborne measurement of sea ice thickness and subice bathymetry.
Kovacs, A., et al, MP 2345, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.111-120, 8 refs.
Valleau, N.C.
Ice cover thickness, Airborne equipment, Electromagnetic prospecting, Sounding, Sea ice, Profiles.
A pilot study was made in May 1985 to determine the feasibility of using an airborne electromagnetic sounding system for profiling sea ice thickness and the subice water depth and conductivity. The study was made in the area of Prudhoe Bay, Alaska. The multi-frequency airborne electromagnetic sounding system consisted of control and recording electronics and an antenna. The electronics module was installed in a helicopter and the 7-m-long tubular antenna was towed, beneath a helicopter, at about 35 m above the ice surface. Examples of the profiling results are presented; they indicate that, for the electromagnetic system used, both first-year and second-year sea ice could be profiled, but the resolution decreased as the ice became rough. This decrease was associated with the large footprint of the system, which effectively smoothed out the sea ice relief. Under-ice water depth was determined, as was seawater conductivity. The results of the feasibility study were considered highly encouraging and further system development is therefore warranted.

42-3551
Electromagnetic measurements of a second-year sea ice floe.
Kovacs, A., et al, MP 2346, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.121-136, 7 refs.
Morey, R.M.
Ice floes, Electromagnetic prospecting, Sea ice, Ice cover thickness, Dielectric properties, Brines, Attenuation.
"Impulse" radar and ice property data were obtained on a second-year sea ice floe. These data were used to develop a relationship for estimating the ice thickness from just the two-way time-of-flight of the impulse radar electromagnetic wavelet traveling from the surface to the ice "bottom" and back to the surface. The relationship developed allows estimation of the thickness of sea ice from about 1 to 8 m, with or without a snow cover. The data revealed that the apparent dielectric constant of sea ice decreased with increasing ice thickness until the thickness reached about 4 m. For sea ice thicker than 4 m, the apparent dielectric constant became relatively constant. With the use of a model for determining the electromagnetic properties of sea ice from its physical properties, as determined from ice cores, the electromagnetic properties were calculated versus depth. The model results were then compared with the electromagnetic properties determined from field measurements. The two results were in good agreement.

42-3552
Rapid method for mapping sea ice distribution and motions from NOAA satellite imagery.
Shapiro, L.H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.137-148, 3 refs.
Ahlnäs, K., Olmsted, C.
Sea ice distribution, Ice mechanics, Remote sensing, Drift, Mapping, Ice edge, Ice formation, Computer applications.

42-3553
Satellite observations of the northern Bering Sea.
Dean, K.G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.149-157, 14 refs.
McRoy, C.P., Ahlnäs, K., George, T.H.
Oceanography, Remote sensing, Sea water, Water temperature, Turbidity, Seasonal variations, LANDSAT.

42-3554
Evaluation of an operational ice forecasting model during summer.
Tucker, W.B., et al, MP 2347, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.159-174, 10 refs.
Hibler, W.D., III.
Ice forecasting, Drift, Ice conditions, Ice edge, Seasonal variations, Models, Sea ice.
The Polar Ice Prediction Sysem (PIPS) is an ice forecasting model run on a daily basis at the U.S. Navy's Fleet Numerical Oceanographic Center (FNOC). The model was originally developed by Hibler (1979) and subsequently modified by Preller (1985) to run on FNOC's Cyber 205. Atmospheric forcing fields are derived from the Naval Operational Global Atmospheric Prediction System (NOGAPS). PIPS is run on a 127-km resolution 47 x 25 grid, which covers the entire Arctic Basin and substantial parts of the Greenland and Norwegian Seas. The system produces forecasts of ice drift, thickness, concentration and divergence at 24-hr intervals out to 144 hr (6 days). Although PIPS is run on a daily basis, the concentration field is initialized weekly using a digitized version of the concentration analysis field prepared by the Naval Polar Oceanography Center at Suitland, Maryland. The system's ability to forecast ice drift, concentration and ice edge location was assessed for the period, from June 15 to October 15, 1986. The PIPS drift predictions were generally excessive, although the predicted drift directions were reasonable. Mean concentration differences between the PIPS forecasts and the analyses were about 12%. Although ice edge location was reasonably predicted in most cases, the model demonstrated a trend of rapid ice retreat in the Chukchi and East Siberian Seas that was unrealistic.

42-3555
Three-level dynamic thermodynamic sea ice model.
Lu, Q., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.175-186, 4 refs.
Kej, A.
Ice models, Thermodynamics, Remote sensing, Ice density, Ice cover thickness, Mathematical models, Ice melting, Freezing, Compaction.

42-3556
Glacial eustacy vs. level rise: its effects on shore stability in the Arctic.
Bruun, P., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.187-203, Refs. p.200-203.
Sea level, Glaciation, Shores.

42-3557
Ice and snow climate information system (CRISP).
Agnew, T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.205-213, 8 refs.
Mathews, T.W.
Ice surveys, Snow surveys, Meteorological data, Sea ice, Climatic changes, Ice conditions.

42-3558
Surface circulation patterns in Yakutat Bay.
Hufford, G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.215-225, 11 refs.
Scheidt, R.
Ocean currents, Sea ice distribution, Floating ice, Oceanography, Seasonal variations, Sea water, Water temperature, Salinity, United States—Alaska—Yakutat Bay.

42-3559
Shelf break upwelling in the Denmark Strait.
Foerster, J.W., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.227-238, 25 refs.
Upwelling, Oceanography, Water transport, Infrared reconnaissance, Marine meteorology, Water chemistry, Air water interactions, Seasonal variations, Denmark Strait.

42-3560
Time domain simulation of the drifting of small floating bodies in waves.
Pawlowski, J.S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.239-251, 16 refs.
Wishahy, M.A.
Floating ice, Drift, Ice conditions, Ice navigation, Offshore structures, Computer applications, Analysis (mathematics), Forecasting.

42-3561
Wave reflection from an ice edge.
Carstens, T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.253-261, 8 refs.
Rösdal, A.
Wave propagation, Reflection, Ice edge, Ice models, Ice elasticity, Flexural strength, Analysis (mathematics).

42-3562
Dynamics and morphology of the Barents Sea ice fields.
Vinje, T., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.263-268, 8 refs.
Ice mechanics, Ice structure, Drift, Sea ice distribution, Bottom topography, Pressure ridges, Sedimentation, Barents Sea.

42-3563
Analysis of ice island movement.
Sackinger, W.M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.269-277, 11 refs.
Tippens, H.R.
Ice mechanics, Ice islands, Offshore structures, Drift, Ice loads, Pack ice, Ocean currents, Wind factors, Velocity.

42-3564
Constitutive relations in sea ice models.
Lu, Q., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.279-288, 20 refs.
Larsen, J., Tryde, P.
Ice models, Sea ice, Ice loads, Heat transfer, Ice water interface, Ice air interface, Analysis (mathematics), Thermodynamics, Ocean currents, Wind factors.

42-3565
Experimental determination of the fracture toughness of urea model ice.
Bentley, D.L., et al, MP 2348, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.289-297, 16 refs.
Sodhi, D.S., Dempsey, J.P.
Ice cracks, Ice models, Urea, Ice solid interface, Offshore structures, Loads (forces), Fracturing, Experimentation, Ice loads, Ice cover thickness, Flexural strength.
The use of different types of model ice in examining ice/structure interactions requires a better understanding of the fracture behavior of these materials in order to accurately interpret the results of model tests. There have been only a limited number of fracture tests performed on model ice. A preliminary experimental study of the fracture toughness of the urea-doped model ice used in the test basin at CRREL has been completed. An "in-situ" wedge-loaded TDCB (tapered double-cantilever-beam) specimen geometry was chosen. An expression for the fracture toughness as a function of applied load, specimen geometry, and ice thickness was developed using a finite element program.

42-3566
Some investigations for EG/AD model ice.
Hirayama, K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.299-306, 5 refs.
Sakamoto, N.
Ice models, Ice solid interface, Ice loads, Flexural strength, Ice strength, Ice structure, Urea, Tests, Ice volume, Ice cover thickness, Ice mechanics.

42-3567
Multiyear ridge load on a conical structure.
Kamesaki, K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.307-316, 7 refs.
Yoshimura, N.
Pressure ridges, Ice loads, Offshore structures, Ice mechanics, Models, Experimentation, Beaufort Sea.

42-3568
Ice load penetrtion modelling.
Riska, K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.317-327, 13 refs.
Frederking, R.
Ice loads, Ice strength, Stress strain diagrams, Structures, Penetration tests, Ice deformation, Models, Temperature effects, Ice pressure.

42-3569
Model tests for multiyear ice loading against a fixed conical structure.
Winkler, M.M., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.329-337, 9 refs.
Ice loads, Offshore structures, Ice solid interface, Ice floes, Models, Tests, Ice override, Doped ice, Pressure ridges, Ice cover thickness.

42-3570
Model tests on arctic structures in ice.
Gowda, S.S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.339-344, 13 refs.
Hakala, R.
Ice loads, Offshore structures, Ice conditions, Models, Tests, Ice pressure.

42-3571
Integrated design approach to arctic offshore platforms.
Gulati, K.C., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.345-352, 6 refs.
Weidler, J.B.
Ice solid interface, Offshore structures, Performance, Ice loads, Design, Safety, Waste disposal, Utilities.

42-3572
Design and operational criteria for systems subject to ice environmental conditions.
Nessim, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.353-366, 9 refs.
Nasseri, T.
Offshore structures, Ice loads, Performance, Design criteria, Safety.

42-3573
Reliability assessment of a prestressed concrete arctic offshore platform.
Birdy, J.N., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.367-386, 15 refs.
Boaz, I.B.
Offshore structures, Prestressed concretes, Ice loads, Flexural strength, Concrete structures, Design, Safety, Ice pressure, Beaufort Sea.

42-3574
Design sea ice load examples using API recommended practice 2N.
Utt, M.E., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.387-393, 15 refs.
Vaudrey, K.D., Turner, B.E.
Ice loads, Offshore structures, Sea ice distribution, Design, Ice pressure, Ice conditions.

42-3575
Distribution of ice pressure acting on an offshore circular pile.
Tanaka, S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.395-411, 7 refs.
Sasaki, K., Ono, T., Saeki, H.
Ice pressure, Pile structures, Ice strength, Experimentation, Ice loads, Strains, Compressive properties, Offshore structures, Static loads.

42-3576
Numerical simulation method for failure analysis and load estimation.
Shibue, T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.413-425, 8 refs.
Kato, K., Kumakura, Y., Toi, Y.
Ice loads, Ice strength, Icebreakers, Offshore structures, Ice breaking, Ice models, Computerized simulation.

42-3577
Elasto-plastic analysis of ice forces on cylindrical structures.
Taguchi, Y., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.427-435, 4 refs.
Kawasaki, T., Tozawa, S., Ishikawa, S.
Ice loads, Offshore structures, Elastic properties, Plastic properties, Ice sheets, Fast ice, Stresses, Ice cover thickness.

42-3578
Structural arrangement of production platforms according to the ice-induced vibration analysis.
Meng, Z., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.437-447, 10 refs.
Wang, L.
Ice loads, Offshore structures, Vibration, Ocean waves, Ocean currents, Ice solid interface, Models.

42-3579
Verification tests of the surface integral method for calculating structural ice loads.
Johnson, J.B., et al, MP 2353, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.449-456, 6 refs.
Sodhi, D.S.
Ice loads, Offshore structures, Stresses, Ice cracks, Experimentation, Measuring instruments, Accuracy, Ice sheets.
Experiments were conducted to determine the accuracy of calculating ice loads on offshore structures using ice stress measurements and a surface integral method. Biaxially-sensitive stress sensors were installed near an ice sheet edge and a flat plate instrumented indentor was pushed against the ice edge to simulate a distributed load on the boundary of a semi-infinite plate. Two experiments were conducted. The first determined the agreement between stress measurements and calculated results for the corresponding analytic solution and examined the accuracy of the surface integral method. The second examined the influence of cracks in the ice sheet on the accuracy of the surface integral method. The measured ice

stresses were of the same order but less than those calculated using theory. The calculated indentor loads using the plane surface integration were within 8 to 30% of the measured loads. Calculated loads using a cylindrical integration surface were only within 40 to 50% of the measured loads due to stress sensor resolution limitations. The surface integral method is a viable way to calculate structural ice loads using in-situ stress measurements. Accuracy of the load calculations is limited by the fidelity of representing the stress along the surface of the integration using widely-spaced stress measurements.

42-3580
Mukluk ice stress measurement program.
Cox, G.F.N., et al, MP 2354, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.457-463, 8 refs.
Johnson, J.B., Bosworth, H.W., Vincent, T.J.
Ice loads, Artificial islands, Stresses, Tensile porperties, Compressive properties, Gravel, Ice mechanics, Ice strength, Ice salinity, Shear stress, Beaufort Sea.
During the spring of 1985, 23 biaxial ice stress sensors were deployed at seven sites around Mukluk, a man-made gravel island in Harrison Bay in the Beaufort Sea. The maximum measured compressive and tensile stresses were 240 and 340 kPa, respectively. However, stresses were usually less than 100 kPa and seldom exceeded 200 kPa. There were no major storms, and net ice motions varied from 1.6 to 5.3 m during the measurement program. While significant warming of the ice sheet occurred during the latter part of the study, thermal ice stresses were much lower than those previously measured in Mackenzie Bay. This may be due to the fact that the ice in Harrison Bay was more saline and had a lower modulus and yield strength than the ice in Mackenzie Bay.

42-3581
Measurements of multi-year ice loads on Hans Island during 1980 and 1981.
Danielewicz, B., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.465-484, 21 refs.
Blanchet, D.
Ice loads, Offshore landforms, Ice strength, Ice floes, Impact strength, Ice salinity.

42-3582
Impact ice loads on offshore structures.
Tunik, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.485-493, 14 refs.
Ice loads, Offshore structures, Ice pressure, Impact strength, Floating ice, Ice mechanics, Dynamic loads, Design.

42-3583
Loads on research vessel *Polarstern* under arctic conditions.
Müller, L., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.495-508, 8 refs.
Payer, H.G.
Ice loads, Ice breaking, Icebreakers, Ice navigation, Design, Stresses.

42-3584
Icebreaking performance of RV *Polarstern* in broken ice-full scale trials in the Weddell Sea, Antarctica.
Häusler, F.U., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.509-519, 5 refs.
Ice navigation, Ice breaking, Icebreakers, Ice conditions, Ice floes, Ice cover thickness, Velocity, Antarctica—Weddell Sea.
In 1983, a series of 37 tests was carried out with the RV *Polarstern* in the Weddell Sea to evaluate the vessel's performance in broken ice of various coverage and thickness. The results are presented in a speed vs. average ice floe thickness diagram, with the shaft horse power as parameter. The average ice floe thickness was determined in a three step procedure: first, the thickness of the various (up to 3) ice floe types encountered was estimated by observation; second, the portion of each ice floe type of the total ice coverage was evaluated by analyzing video recordings; third, the average ice floe thickness was calculated by weighting the individual ice floe thicknesses by its portion. The ship's speed was determined by difference methods. (Auth.)

42-3585
Evaluation of the maximum breakable thickness of an icebreaking vessel from ramming tests in level ice.
Häusler, F.U., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.521-530, 11 refs.
Ice breaking, Ice cover thickness, Icebreakers, Ice cover thickness, Ice strength, Velocity, Tests, Snow cover effect, Antarctica—Weddell Sea.
Two series of ramming tests carried out with RV *Polarstern* in the Weddell Sea in 1983 have been analyzed to evaluate the maximum ice thickness which can be broken by the vessel in continuous motion. In the approach used in the analysis, the kinetic energy stored in the vessel at the moment of attack was converted into an "additional" power available during deceleration. The power required to break the same ice thickness in which the vessel got stuck in continuous motion was estimated to be the sum of the "additional" and the shaft horse power. The strong headwinds observed in one of the two test series were taken into consideration. The determined power values were corrected for the varying ice bending strengths. From the results, the limit ice thickness to be broken by the RV *Polarstern* in continuous motion was evaluated to be 1.35 m for 500 kPa winter ice and to be 1.61 m for 350 kPa summer ice. The latter value is in acceptable agreement with the measurements during one test run, where continuous icebreaking was observed for some breaking cycles and it also agrees with results from icebreaking trials carried out later in Spitsbergen. (Auth.)

42-3586
Finite-element analysis of the elasto-plastic modelling of the indentation problem in ship-ice interaction.
Jebaraj, C., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.531-542, 22 refs.
Swamidas, A.S.J., Jones, S.J., Munaswamy, K.
Ice breaking, Icebreakers, Ice solid interface, Metal ice friction, Elastic properties, Plastic properties, Ice cover thickness, Ice navigation, Ice deformation.

42-3587
Ice-rubble beneath barges in ice-covered waters.
Ettema, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.543-555, 10 refs.
Huang, H.P.
Ice navigation, Ice conditions, Ships, Ice floes, Ice breaking, Ice cover thickness, Velocity.

42-3588
Maneuvering performance in ice of the United States Coast Guard 140-foot icebreaker.
Kannari, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.557-574, 14 refs.
Humphreys, D.H.
Ice navigation, Icebreakers, Ice conditions, Ice breaking, Tests, Velocity, Models.

42-3589
Mid-winter 1983 ship transit in the Alaskan arctic by the icebreaker *Polar Sea*.
Seibold, F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.575-587, 4 refs.
Voelker, R.
Icebreakers, Ice navigation, Ice breaking, Marine transportation, Velocity, Chukchi Sea, Bering Sea.

42-3590
Tanker loading at exposed arctic terminals.
Jolles, W.H., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.589-605, 11 refs.
Tanker ships, Ice conditions, Ice navigation, Loading, Moorings, Velocity, Computer applications.

42-3591
Computer software to analyze ice interaction with moored ships.
Tseng, J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.607-617, 15 refs.
Allyn, N., Charpentier, K.
Ice loads, Ice conditions, Moorings, Ships, Ice solid interface, Computer applications, Models, Ice pressure, Design criteria.

42-3592
Computer-aided strategic route selection system.
Thomson, N.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.619-630, 28 refs.
Sykes, J.F.
Ice navigation, Marine transportation, Ice conditions, Ice breaking, Computer applications, Ice mechanics, Ice forecasting, Velocity.

42-3593
Ship/ice probabilities in arctic shipping.
Ferregut, C., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.631-643, 10 refs.
Perchanok, M., Daley, C.
Ice navigation, Ice conditions, Ice solid interface, Damage, Design, Mathematical models, Ice cover thickness, Visibility.

42-3594
Winter relocation techniques for arctic structures.
Thomas, G.A.N., International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.645-653, 3 refs.
Offshore structures, Ice conditions, Floating structures, Icebreakers, Protection, Safety, Cost analysis, Offshore drilling.

42-3595
Utilization of composite design in the Arctic and sub-Arctic.
Gerwick, B.C., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.655-662, 5 refs.
Berner, D.
Ice loads, Offshore structures, Reinforced concretes, Protection, Ice pressure, Construction materials, Shear strength.

42-3596
Design and behavior of composite ice-resisting walls.
Adams, P.F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.663-674, 22 refs.
Zimmerman, T.J.E., MacGregor, J.G.
Offshore structures, Reinforced concretes, Ice loads, Shear strength, Protection, Walls, Design, Construction materials, Models.

42-3597
Resistance of composite steel/concrete structures to localized ice loading.
Smith, J.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, 675-687, 2 refs.
McLeish, A.
Offshore structures, Ice loads, Reinforced concretes, Shear strength, Models, Protection, Tests.

42-3598
Strength of composite, sandwich system, ice-resisting structures.
Matsuishi, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.689-698, 2 refs.
Iwata, S.
Offshore structures, Ice loads, Reinforced concretes, Design, Models, Tests, Strength.

42-3599
Tests on composite ice-resisting walls.
O'Flynn, B., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.699-710, 7 refs.
MacGregor, J.G.
Offshore structures, Ice loads, Reinforced concretes, Shear strength, Tests, Strains, Mathematical models.

42-3600
Experimental studies on composite members for arctic offshore structures.
Ohno, F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.711-719, 3 refs.
Offshore structures, Reinforced concretes, Ice loads, Shear strength, Tests, Flexural strength, Shear stress.

42-3601
Arctic and offshore research information system.
Shoemaker, H.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 9th, Fairbanks, AK, Aug. 17-22, 1987. Proceedings, Vol.1. Edited by W.M. Sackinger and M.O. Jeffries. (Port and ocean engineering under Arctic conditions), Fairbanks, University of Alaska, Geophysical Institute, 1988, p.721-733.
Chiang, D.L.
Offshore structures, Ice conditions, Computer applications, Data processing, Information systems, Engineering.

42-3602
Influence of snowfall on road condition, vehicle speed and fuel consumption. [Inverkan av snoevaeder pa vaeglag, fordonshastighet och braenslefoerbrukning], Ragnarsson, G., et al, *Sweden. Statens vag- och trafikinstitut. Meddelande,* 1987, No.513, 40p., PB87-157 798, In Swedish.
Oeberg, G.
Snow cover effect, Roads, Snowfall, Snow removal, Snow depth, Snow water content.

42-3603
Preliminary determination of electrolyte stress during freeze/thaw cycling of a Na/S cell.
Braithwaite, J.W., et al, *Sandia National Laboratories, Albuquerque, NM. Report,* 1986, SAND-86-1082C; CONF-861068-12, 22p. DE87-002 050.
Subia, S.R., Hammetter, W.F.
Freeze thaw cycles, Vehicles, Batteries, Damage, Design, Stresses.

42-3604
Relationship between ice island movement and weather conditions.
Yan, M.-H., *Alaska. University. Geophysical Institute. Report,* Sep. 1986, DOE/MC/20037-2231, 92p. DE87-000 652.
Ice islands, Icebergs, Drift, Ice mechanics, Climatic factors, Synoptic meteorology, Dynamic properties.

42-3605
Baffin Island experimental oil spill and dispersal studies. Hydrocarbon bioaccumulation and histopathological and biochemical responses in marine bivalve molluscs.
Neff, J.M., et al, Boulder, CO, Outer Continental Shelf Environmental Assessment Program, Dec. 1986, p.1-153, PB87-195 137, Principal investigators' final reports. Vol.53; Report No.4589. Refs. p.97-101.
Hillman, R.E., Boehm, P.D.
Oil spills, Marine biology, Hydrocarbons, Water pollution, Experimentation, Ocean environments, Canada—Northwest Territories—Baffin Island.

42-3606
Analysis of microwave structures and mixing formulae with applications to remote sensing measurements.
Sihvola, A., *Helsinki University of Technology, Espoo. Electromagnetics Laboratory. Report,* Nov. 1986, ISBN-951-753-973-8, 105p., PB87-153 508, Ph.D. thesis.
Snow surveys, Microwaves, Remote sensing, Snow density, Snow water content, Unfrozen water content, Dielectric properties.

42-3607
Proceedings.
International Instrumentation Symposium, 34th, Albuquerque, NM, May 2-6, 1988, Research Triangle Park, NC, Instrument Society of America, 1988, 744p., Refs. passim. For selected papers see 42-3608 through 42-3610.
Measuring instruments, Data processing, Temperature measurement, Ice formation, Wind tunnels, Design, Computer applications, Meteorological data.

42-3608
Computer-controlled data acquisition system for a hydraulic flume.
Zabilansky, L.J., MP 2349, International Instrumentation Symposium, 34th, Albuquerque, NM, May 2-6, 1988. Proceedings, Research Triangle Park, NC, Instrument Society of America, 1988, p.453-460, 2 refs.
Channels (waterways), Ice formation, Frazil ice, Ice mechanics, Temperature effects, Data processing, Ice accretion, Experimentation.

42-3609
Evaluation of platinum resistance thermometers.
Daryabeigi, K., et al, International Instrumentation Symposium, 34th, Albuquerque, NM, May 2-6, 1988. Proceedings, Research Triangle Park, NC, Instrument Society of America, 1988, p.673-687, 12 refs.
Dillon-Townes, L.A.
Wind tunnels, Temperature measurement, Temperature variations, Analysis (mathematics).

42-3610
Buffer rod designs for ultrasonic flow measurements at cryogenic and high temperatures, + or - 200 C.
Lynnworth, L.C., International Instrumentation Symposium, 34th, Albuquerque, NM, May 2-6, 1988. Proceedings, Research Triangle Park, NC, Instrument Society of America, 1988, p.697-702, 14 refs.
Ultrasonic tests, Measuring instruments, Buffers, Rods, Temperature variations.

42-3611
Erosion control: stay in tune.
Conference of the International Erosion Control Association, 19th, New Orleans, LA, Feb. 25-26, 1988, Steamboat Springs, CO, International Erosion Control Association, [1988], 497p., Refs. passim. For selected papers see 42-3612 through 42-3615.
Erosion, Banks (waterways), Soil conservation, Shore erosion, Countermeasures, Meteorological factors, Frozen ground, Slope protection, Freeze thaw cycles, Meetings.

42-3612
Erosion control practices in Colorado ski areas.
DeHaven, M.G., et al, Conference of the International Erosion Control Association, 19th, New Orleans, LA, Feb. 25-26, 1988. Proceedings. Erosion control: stay in tune, Steamboat Springs, CO, [1988], p.67-73.
Berry, C.A.
Snow erosion, Slope protection, Mountains, Forest land, Countermeasures, Skis.

42-3613
Afforestation techniques for water and soil conservation forests in arid loess hills.
Zhang, F., Conference of the International Erosion Control Association, 19th, New Orleans, LA, Feb. 25-26, 1988. Proceedings. Erosion control: stay in tune, Steamboat Springs, CO, [1988], p.235-251.
Soil erosion, Soil conservation, Soil water, Forestry, Revegetation, Loess, Mountains, Grasses, China—Mongolia.

42-3614
Erosion of soil under frozen and freeze-thaw conditions.
Edwards, L.M., et al, Conference of the International Erosion Control Association, 19th, New Orleans, LA, Feb. 25-26, 1988. Proceedings. Erosion control: stay in tune, Steamboat Springs, CO, [1988], p.353-366, 14 refs.
Burney, J.R.
Soil erosion, Freeze thaw cycles, Frozen ground, Soils, Runoff, Sediment transport, Tests.

42-3615
Lake shore erosion processes and controls.
Edil, T.B., et al, Conference of the International Erosion Control Association, 19th, New Orleans, LA, Feb. 25-26, 1988. Proceedings. Erosion control: stay in tune, Steamboat Springs, CO, [1988], p.455-469, 15 refs.
Bosscher, P.J.
Shore erosion, Lakes, Banks (waterways), Shoreline modification, Ice erosion, Wind erosion, Wave propagation, Rain, Great Lakes.

42-3616
Heat balance on the icefield of San Rafael Glacier, the northern Patagonia Icefield.
Kondo, H., et al, *Bulletin of glacier research,* 1988, No.6, p.1-8, 12 refs.
Inoue, J.
Glacier heat balance, Snow heat flux, Meteorological factors, Snow surface, Albedo, Wind velocity, Cloud cover, Latent heat, Chile—San Rafael Glacier.

42-3617
Evaporation of river water in West Kunlun Mountains, China.
Nakawo, M., et al, *Bulletin of glacier research,* 1988, No.6, p.9-15, 9 refs.
Takahara, H.
Mountain glaciers, Rivers, Evaporation, Heat balance, Latent heat, Solar radiation, Meteorological factors.

42-3618
Climate and weather at the advance camp in East Queen Maud Land, Antarctica.
Kikuchi, T., et al, *Bulletin of glacier research,* 1988, No.6, p.17-25, 26 refs.
Ageta, Y., Okuhira, F., Shimamoto, T.
Glacial meteorology, Air temperature, Wind velocity, Snow temperature, Diurnal variations, Synoptic meteorology, Records (extremes), Antarctica—Queen Maud Land.
In spite of the high altitude of the new Advance Camp (74 deg 12 min S, 34 deg 59 min E, 3198 m above sea level) in East Queen Maud Land, climate is more like the Cold Katabatic rather than the Cold Interior. The wind directional constancy reaches 0.93 and is comparable to the Mizuho value, 0.96. The annual mean air temperature is estimated to be -43.2C, which is considerably higher than the 10-m depth snow temperature of the same altitude in the Enderby Land area. The daily and synoptic variations of the air temperature and the surface wind are also described. (Auth.)

42-3619
Ice flow characteristics derived from bedrock topography around Mizuho Station, East Antarctica.
Ohmae, H., et al, *Bulletin of glacier research,* 1988, No.6, p.27-32, 15 refs.
Nishio, F.
Glacier flow, Glacier beds, Radio echo soundings, Ice mechanics, Height finding, Altitude, Profiles, Antarctica—Mizuho Station.
The surface and bedrock topography of an about 100 kilometer square area around Mizuho Station and along routes SZ and Y, in which one of the tributaries of the Shirase Glacier is located in East Queen Maud Land, was obtained by an oversnow traverse using a radio echo sounder and a barometric altimeter. Bedrock topography along the routes showed an elevation of almost sea level with an undulation of several hundred meters. The map of the surface and bedrock topography around Mizuho Station shows that the station is located on the slope of a broad ridge that trends to north-west-west (NWW), and is placed between two hills of bedrock in the northward and the southward direction that are several hundred meters higher than surrounding bed. As to relation between the surface and bedrock topography, the direction of ice flow around Mizuho Station is estimated to be between NWW and NW. Comparison of this ice flow with that of other polar glaciers revealed that

it is an ice stream influenced by local bedrock topography. (Auth.)

42-3620
Bedrock and ice surface profiles in the Shirase Glacier basin determined by the ground-based radio-echo sounding.
Nishio, F., et al, *Bulletin of glacier research,* 1988, No.6, p.33-39, 6 refs.
Ohmae, H., Ishikawa, M.
Glacier surfaces, Glacier beds, Radio echo soundings, Glacier thickness, Profiles, Glacier flow, Antarctica—Shirase Glacier.
Profiles of bedrock and ice surface along several routes in the Shirase Glacier basin, Antarctica, were determined by ground-based radio-echo soundings. The routes consisted of the flow line of the Shirase Glacier, the 2200 m contour line between Mizuho Station and Yamato Mts., and the routine traverse route between Showa Station and Mizuho Station, all over a distance of about 1200 km. The 60 MHz radio-echo sounder was designed and constructed by the National Institute of Polar Research to be carried on an oversnow vehicle. Results of measurements show that the elevation of bedrock is approximately at sea-level from the coast near Showa Station to the inland near Mizuho Station, while that in the upstream area of the Shirase Glacier is gradually increasing up to about 1500 m at a point 400 km inland, where the ice thickness reaches 2000 m. A deep subglacial trench was found near the outlet of the Shirase Glacier in the measurements along the 2000 m contour route. Comparison of profiles of the bedrock and the ice surface along the Shirase glacier flow line revealed that surface undulations correspond to irregular features of the bedrock. To supplement the data for the depth of bedrock in some regions where no radio-echo was obtained from the bed, measurements of the gravity anomaly were used to determine the ice thickness. (Autn.)

42-3621
Preliminary estimation of drifting snow convergence along a flow line of Shirase Glacier, East Antarctica.
Takahashi, S., *Bulletin of glacier research,* 1988, No.6, p.41-46, 19 refs.
Snowdrifts, Glacier surfaces, Wind velocity, Snowfall, Sublimation, Snow accumulation, Antarctica—Shirase Glacier.
The drifting snow convergence along a flow line of the Shirase Glacier, E. Antarctica is obtained by estimating the snow drift transport rate caused by katabatic winds on the ice sheet. The estimated convergence showed a large positive value in the coastal region and a negative value at about 300 km distance from the coast, whereas it is negligible in the inland region further than 400 km. The large amount of net accumulation in the coastal region can be roughly explained by drifting snow convergence in addition to precipitation and sublimation. (Auth. mod.)

42-3622
Outlines of the Japanese Arctic Glaciological Expedition in 1987.
Watanabe, O., et al, *Bulletin of glacier research,* 1988, No.6, p.47-50.
Fujii, Y.
Glacial meteorology, Ice cores, Drill core analysis, Expeditions, Climatic changes, Environments.

42-3623
Meteorological observations at Åsgårdfonna, Spitsbergen, 1987.
Izumi, K., et al, *Bulletin of glacier research,* 1988, No.6, p.51-54, 1 ref.
Satow, K., Fujii, Y., Kawaguchi, S.
Glacial meteorology, Air temperature, Humidity, Ice cores, Climatic changes, Drill core analysis, Hoarfrost, Ice formation, Norway—Spitsbergen.

42-3624
Some remarks on the mass balance and the terminal-lateral fluctuations of San Rafael Glacier, the Northern Patagonia icefield.
Kondo, H., et al, *Bulletin of glacier research,* 1988, No.6, p.55-63, 18 refs.
Yamada, T.
Glacier mass balance, Glacier oscillation, Glacier flow, Meteorological factors, Glacier surveys, Ablation, Glacier alimentation, Chile—San Rafael Glacier.

42-3625
Contribution of glacier meltwater to runoff in glacialized watersheds in the Langtang Valley, Nepal Himalayas.
Yamada, T., et al, *Bulletin of glacier research,* 1988, No.6, p.65-74, 10 refs.
Motoyama, H.
Glacier melting, Runoff, Meltwater, Watersheds, Glacial hydrology, Glacial meteorology, Glacier mass balance, Seasonal variations, Himalaya Mountains.

42-3626
Preliminary report of Sino-Japanese joint glaciological expedition in West Kunlun Mountains 1987.
Zheng, B., et al, *Bulletin of glacier research,* 1988, No.6, p.75-80, 7 refs.
Chen, J., Ageta, Y.
Glaciology, Ice cores, Snow surveys, Geology, Drill core analysis, Expeditions, Permafrost, Meteorological data, China—Kunlun Mountains.

42-3627
Recent Soviet activities on ice core drilling and core investigations in Arctic region.
Zagorodnov, V.S., *Bulletin of glacier research,* 1988, No.6, p.81-84, 4 refs.
Ice cores, Drill core analysis, Ice temperature, Glacier ice, Thermal drills, Unfrozen water content, Temperature gradients.

42-3628
Characteristics of the performance of bases and foundations in eastern Siberia and the North. [Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa],
Kozakov, IU.N., ed, Krasnoyarsk, Krasnoyarskii PromstroiNIIproekt, 1986, 142p., In Russian. For individual papers see 42-3629 through 42-3639. Refs. passim.
Research projects, Foundations, Design, Permafrost beneath structures, Earthwork, Drilling, Construction equipment, Construction materials, Artificial freezing, Permafrost control.

42-3629
Design of liquid, seasonally active cooling devices with flat jet-separators. [Raschet zhidkostnykh sezonnodeistvuiushchikh okhlazhdaiushchikh ustroistv so struerazdelitelem ploskogo tipa],
Konovalov, A.A., et al, Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.12-25, In Russian. 5 refs.
Braman, N.V.
Soil freezing, Permafrost control, Artificial freezing, Frozen ground temperature, Design.

42-3630
Impact of seasonal thawing of permafrost on the performance of laterally loaded piles. [Vliianie sezonnogo ottaivaniia vechnomerzlykh gruntov na raboty svai pri gorizontal'nom vozdeistvii],
Medvedeva, O.P., Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.26-32, In Russian. 5 refs.
Foundations, Piles, Seasonal freeze thaw, Ground thawing, Stresses, Design.

42-3631
Calculating ground temperature at the base of a structure buried in permafrost controlled with steam-liquid cooling devices. [Raschet temperatury grunta v osnovanii zaglublennogo sooruzheniia s primeneniem parozhidkostnykh okhlazhdaiushchikh ustroistv],
Naumova, L.A., et al, Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.33-42, In Russian. 2 refs.
Shneerson, S.L.
Soil temperature, Temperature measurement, Permafrost beneath structures, Permafrost physics, Plastic properties, Permafrost control.

42-3632
Studying stress state of large panel buildings with plate foundations and hydraulic fills in the Yakutsk area. [Issledovanie napriazhennogo sostoianiia konstruktsii krupnopanel'nogo doma na skladchatykh fundamentakh i namyvnykh gruntakh v usloviiakh lAkutska],
Mordovskii, A.G., et al, Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.43-52, In Russian. 5 refs.
Stepanov, V.V., Matyskin, A.G.
Large panel buildings, Permafrost beneath structures, Foundations, Earth fills, Design.

42-3633
Studying bearing strength of piles cast in punched holes. [Issledovanie nesushcheI sposobnosti nabivnykh svai v probitykh skvazhinakh],
Bulankin, N.F., et al, Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.53-60, In Russian. 2 refs.
Stoian, IU.F., Ivanov, V.F., Kogol', A.P.
Foundations, Concrete piles, Soil compaction, Bearing strength, Tests, Concrete placing.

42-3634
Evaluating the accuracy of determining bearing strength of piles in the Krasnoyarsk region, using different methods. [Otsenka tochnosti opredeleniia nesushcheI sposobnosti svai razlichnymi metodami v regional'nykh gruntakh Krasnoiarskogo kraia],
Kozakov, IU.N., et al, Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.61-69, In Russian. 2 refs.
Vashko, G.V.
Foundations, Piles, Bearing strength, Permafrost beneath structures.

42-3635
Tables for determining physical and mechanical properties of clayey soils in the southern Krasnoyarsk region. [Regional'nye tablitsy dlia opredeleniia fiziko-mekhanicheskikh svoistv glinistykh gruntov iuga Krasnoiarskogo kraia],
Konovalov, A.A., et al, Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.70-92, In Russian. 4 refs.
Clay soils, Deformation, Loess, Frozen fines, Physical properties.

42-3636
Studying bearing strength of piles, under soil conditions of the Komi ASSR, for applying the method of pile sinking to specified marks. [Issledovanie nesushcheI sposobnosti svai v gruntovykh usloviiakh Komi ASSR s tsel'iu primeneniia metoda pogruzheniia svai do zadannoi otmetki],
Sukhorukov, V.A., Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.93-98, In Russian. 2 refs.
Tests, Foundations, Supports, Piles, Bearing strength, Cryogenic soils, Peat, Fines, Sands.

42-3637
Ground thawing effect on the stability of underground communication conduits. [Vliianie ottaivaniia gruntov na ustoichivost' podzemnykh kollektorov dlia kommunikatsii],
Grebenets, V.I., Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.99-108, In Russian. 5 refs.
Underground facilities, Concrete structures, Transmission lines.

42-3638
Thermal regime of buried pipelines with a natural temperature field. [Osobennosti teplovogo rezhima truboprovoda ulozhennogo v grunt s estestvennym temperaturnym polem],
Karpov, V.I., Osobennosti raboty osnovanii i fundamentov v raionakh Vostochnoi Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.109-123, In Russian. 10 refs.
Mathematical models, Underground facilities, Active layer, Seasonal freeze thaw, Pipelines, Heat transfer, Analysis (mathematics).

42-3639
Determining the coefficient of drainage for manual water discharge through freezing pipes. [Opredelenie koeffitsienta raskhoda ruchnogo vypuska vody rabotosposobnogo pri oledenenii vodovoda],
Kushev, M.IU., Osobennosti raboty osnovaniĭ i fundamentov v raĭonakh Vostochnoĭ Sibiri i Severa (Characteristics of the performance of bases and foundations in eastern Siberia and the North) edited by IU.N. Kazakov, Krasnoyarsk, Krasnoyarskiy PromstroiNIIproekt, 1986, p.124-134, In Russian. 7 refs.
Water pipelines, Active layer, Permafrost thermal properties, Pipeline freezing, Cold weather operation, Design.

42-3640
Limit state probabilities for wood structural members.
Hendrickson, E.M., et al, *Journal of structural engineering*, Jan. 1987, 113(1), p.88-106.
Ellingwood, B., Murphy, J.
Wooden structures, Building codes, Snow loads, Loads (forces), Bearing strength, Models, Design criteria.

42-3641
Permafrost bibliography update, 1983-1987.
Brennan, A.M., comp., *Glaciological data*, Apr. 1988, GD-21, 225p.
Permafrost, Bibliographies, Geocryology, Ground ice, Frozen ground.

42-3642
Numerical methods in geomechanics, Nagoya 1985.
International Conference on Numerical Methods in Geomechanics, 5th, Nagoya, Japan, Apr. 1-5, 1985, Rotterdam, Netherlands, A.A. Balkema, 1985, 1307p. (2 vols.), Refs. passim. For selected papers see 42-3643 thrugh 42-3646.
Kawamoto, T., ed, Ichikawa, Y., ed.
Soil mechanics, Frozen ground mechanics, Analysis (mathematics), Soil water, Frost penetration, Frost heave, Soil freezing.

42-3643
Numerical analysis of moisture movement in soils during freezing.
Yanagisawa, E., et al, International Conference on Numberical Methods in Geomechanics, 5th, Nagoya, Japan, Apr. 1-5, 1985. Proceedings, edited by T. Kawamoto and Y. Ichikawa, Rotterdam, Netherlands, A.A. Balkema, 1985, p.575-580, 6 refs.
Yao, Y.J., Kashiwazaki, A.
Soil freezing, Soil water migration, Frost heave, Settlement (structural), Thermal conductivity, Frost penetration, Temperature distribution, Mathematical models.

42-3644
Numerical analysis of bearing capacity of soft soil with a frozen top layer.
Fisenko, G.L., et al, International Conference on Numberical Methods in Geomechanics, 5th, Nagoya, Japan, Apr. 1-5, 1985. Proceedings, edited by T. Kawamoto and Y. Ichikawa, Rotterdam, Netherlands, A.A. Balkema, 1985, p.935-939, 7 refs.
Kozlov, IU.S., Fadeev, A.B.
Frozen ground strength, Bearing strength, Frost penetration, Stresses, Models, Settlement (structural).

42-3645
Behavior and simulation of weathered granite tunnel roofed by freezing.
Murayama, S., et al, International Conference on Numberical Methods in Geomechanics, 5th, Nagoya, Japan, Apr. 1-5, 1985. Proceedings, edited by T. Kawamoto and Y. Ichikawa, Rotterdam, Netherlands, A.A. Balkema, 1985, p.1119-1126, 2 refs.
Tunneling (excavation), Freeze thaw cycles, Shear strength, Settlement (structural), Weathering, Analysis (mathematics), Mountains.

42-3646
Stability analysis of a rock cavern with LPG storage under thermal stresses.
Ishizuka, Y., et al, International Conference on Numberical Methods in Geomechanics, 5th, Nagoya, Japan, Apr. 1-5, 1985. Proceedings, edited by T. Kawamoto and Y. Ichikawa, Rotterdam, Netherlands, A.A. Balkema, 1985, p.1233-1240, 4 refs.
Kinoshita, N., Okuno, T.
Caves, Frost heave, Rocks, Frozen ground mechanics, Thermal stresses, Tensile properties, Experimentation, Temperature effects.

42-3647
Soil cohesion as affected by freezing, water content, time and tillage.
Bullock, M.S., et al, *Soil Science Society of America. Journal*, May-June 1988, 52(3), p.770-776, 28 refs.
Kemper, W.D., Nelson, S.D.
Soil freezing, Cohesion, Soil aggregates, Ground water, Stability, Soil compaction, Time factor, Temperature effects, Seasonal variations.

42-3648
Decade of glacier investigations for utilization of Greenland hydropower.
Weidick, A., et al, *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1986, No.128, p.157-169, 17 refs.
Thomsen, H.H.
Glacial hydrology, Glacier melting, Land ice, Ice edge, Topographic features, Remote sensing, Seasonal variations, Runoff, Meteorological data, Greenland.

42-3649
Interactions between engineering structures and geological media. [Vzaimodeĭstvie inzhenernykh sooruzheniĭ s geologicheskoĭ sredoĭ],
Molokov, L.A., Moscow, Nedra, 1988, 222p., In Russian with English table of contents enclosed. 55 refs.
Hydraulic structures, Engineering geology, Hydrothermal processes, Permafrost thermal properties, Earthquakes, Lakes, Water storage, Dams, Glacial deposits, Moraines.

42-3650
Effective criterion of mudflow and flood danger and its prognostic significance. [Effektivnyĭ kriteriĭ selevoĭ i pavodkovoĭ opasnosti i ego prognosticheskoe znachenie],
Kherkheulidze, G.I., *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.82, p.28-41, In Russian. 7 refs.
Floods, Slope processes, Mudflows, Rivers, Hydrology.

42-3651
Estimating the effect of irrigational measures on the runoff of small rivers under different natural conditions. [Osobennosti otsenki vliianiia orositel'nykh meropriiatiĭ na stok malykh rek v razlichnykh prirodnykh usloviiakh],
Pen'kova, N.V., et al, *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.82, p.52-74, In Russian. 28 refs.
Chikvaidze, G.D.
Rivers, Runoff, Water balance, Snow water equivalent, River ice, Ice conditions.

42-3652
Forecasting the runoff of glacial rivers during the glacier ablation period. [Prognoz stoka rek s lednikovym pitaniem za period abliatsii lednikov],
Tsomaia, V.Sh., et al, *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1987, Vol.82, p.75-93, In Russian.
Aliev, I.A.
Alpine landscapes, Glacial rivers, Runoff, Glacier ablation, Snow water equivalent, USSR—Caucasus.

42-3653
Modern methods of building tall concrete dams. [Sovremennye metody betoni.ovaniia vysokikh plotin],
Sudakov, V.B., et al, Moscow, Energoatomizdat, 1988, 256 p. (Pertinent p.5-67), In Russian with abridged English table of contents enclosed. 63 refs.
Tolkachev, L.A.
Hydraulic structures, Cold weather construction, Winter concreting, Concrete structures, Dams, Winter concreting, USSR—Angara River, USSR—Yenisey River.

42-3654
Winter city trends.
Naisbitt Group Inc., Edmonton, Alta., Winter Cities Conference Corporation, 1988, 44p.
Urban planning, Cold weather construction, Buildings, Transportation, Construction materials, Winter.

42-3655
Design evolution and performance of the Soviet Union's large polar icebreakers.
Brigham, L.W., Ocean '86 Conference, Washington, D.C., Sep. 23-25, 1986. Proceedings, Vol.5, New York, Institute of Electrical and Electronics Engineers, 1986, p.1462-1467, 5 refs.
Design, Icebreakers, Ice breaking, Ice cover thickness, USSR.

42-3656
Evidence for ideal and non-ideal equilibrium freezing of leaf water in frosthardy ivy *hedera helix* and winter barley *hordeum vulgare*.
Hansen, J., et al, *Botanica acta*, Feb. 1988, 101(1), p.76-82, 27 refs.
Beck, E.
Freezing, Unfrozen water content, Frost resistance.

42-3657
Alpine vegetation map of Caribou Lake Valley and Fourth of July Valley, Front Range, Colorado, U.S.A.
Haase, R., *Arctic and alpine research*, Feb. 1987, 19(1), p.1-10, 39 refs.
Alpine landscapes, Vegetation, Maps, United States—Colorado—Front Range.

42-3658
Establishment of white spruce populations and responses to climatic change at the treeline, Churchill, Manitoba, Canada.
Scott, P.A., et al, *Arctic and alpine research*, Feb. 1987, 19(1), p.45-51, 35 refs.
Hansell, R.I.C., Fayle, D.C.F.
Plants (botany), Forest tundra, Forest lines, Canada—Manitoba—Churchill.

42-3659
Components of the surface radiation balance of subarctic wetland terrain units during the snow-free season.
Lafleur, P., et al, *Arctic and alpine research*, Feb. 1987, 19(1), p.53-63, 15 refs.
Rouse, W.R., Hardill, S.G.
Radiation balance, Albedo, Swamps.

42-3660
Erosion by snow avalanche and implications for geomorphic stability, Torlesse Range, New Zealand.
Ackroyd, P., *Arctic and alpine research*, Feb. 1987, 19(1), p.65-70, 20 refs.
Avalanche erosion, Geomorphology, New Zealand—Torlesse Range.

42-3661
Accelerated ablation at a glacier ice-cliff margin, Dry Valleys, Antarctica.
Chinn, T.J.H., *Arctic and alpine research*, Feb. 1987, 19(1), p.71-80, 18 refs.
Glacier ablation, Solar radiation, Ice melting, Meltwater, Antarctica—Victoria Land.
Cliffed margins of cold glaciers are common in polar regions and are an important source of meltwater. Because of low sun angles, the cliff face receives more solar radiation than does the upper glacier surface and therefore melts at a faster rate. Ablation of an ice-cliff is particularly enhanced, and melt is initiated early in the season where the cliff impinges against a steep (rock) slope. On subdued ice cliffs which do not calve, differential ablation can form ice terraces, which in turn increase ablation by increasing the area of ice-cliff faces. (Auth.)

42-3662
Low profile of the northwest Laurentide ice sheet.
Beget, J., *Arctic and alpine research*, Feb. 1987, 19(1), p.81-88, 44 refs.
Glaciation, Paleoclimatology.

42-3663
Distribution of diatoms in the surface sediments of the Kane Basin.
Kravitz, J.H., et al, *Arctic and alpine research*, Feb. 1987, 19(1), p.89-94, 16 refs.
Burckle, L.H., Bromble, S.L.
Marine deposits, Glacial deposits.

42-3664
Power plants of modern sea vessels. [Energeticheskie ustanovki sovremennykh morskikh sudov],
Peresypkin, V.I., ed, Leningrad, Transport, 1987, 128p., In Russian. For selected papers see 42-3664 through 42-3667. Refs. passim.
Cargo, Ice navigation, Ships, Electric power, Propellers, Icebreakers, All terrain vehicles, Air cushion vehicles, Transportation.

42-3665
Comparative efficiency of power plants on icebreaking cargo ships. [Sravnitel'naia effektivnost' energeticheskikh ustanovok ledokol'no-transportnykh sudov],
Kuklin, A.M., et al, Energeticheskie ustanovki sovremennykh morskikh sudov (Power plants of modern sea vessels) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.13-25, In Russian. 7 refs.
Levin, B.M., Shostak, V.P., IArosh, V.I.
Ice navigation, Electric power, Propellers, Icebreakers, Transportation, Cargo.

42-3666
Analysis of methods of propeller reversing in superpower icebreakers. [Analiz sposobov reversa grebnykh vintov sverkhmoshchnogo ledokola],
Frolov, A.A., Energeticheskie ustanovki sovremennykh morskikh sudov (Power plants of modern sea vessels) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.32-40, In Russian.
Icebreakers, Ice navigation, Ice breaking, Propellers.

42-3667
Noise and vibration of air-cushion vessels. [Shum i vibratsiia sudov na vozdushnoĭ podushke],
El'nik, A.G., et al, Energeticheskie ustanovki sovremennykh morskikh sudov (Power plants of modern sea vessels) edited by V.I. Peresypkin, Leningrad, Transport, 1987, p.64-70, In Russian.
Likhachev, S.V.
All terrain vehicles, Air cushion vehicles, Ships, Tests.

42-3668
Quantitative analysis of exogenic relief. [Kolichestvennyĭ analiz ekzogennogo rel'efoobrazovaniia],
Trofimov, A.M., ed, Kazan. Universitet, 1987, 139p., In Russian. For selected paper see 42-3669.
Paleoclimatology, Paleoecology, Pleistocene, Periglacial processes, Geomorphology, Permafrost distribution, Hydrothermal processes, Erosion.

42-3669
Quantitative evaluation of the role of pleistocene periglacial processes. [Metodika kolichestvennoĭ otsenki roli pleistotsenovykh perigliatsial'nykh protsessov],
Butakov, G.P., Kolichestvennyĭ analiz ekzogennogo rel'efoobrazovaniia (Quantitative analysis of exogenic relief formation) edited by A.M. Trofimov, Kazan Universitet, 1987, p.11-23, In Russian. 19 refs.
Geomorphology, Tundra, Forest tundra, Permafrost origin, Permafrost distribution, Paleoclimatology, Paleoecology, Periglacial processes, Geomorphology.

42-3670
Automation of industrial ship-building processes. [Avtomatizatsiia sudovykh proizvodstvennykh protsessov],
Peresypkin, V.I., ed, Leningrad, Transport, 1987, 113p., In Russian. For selected papers see 42-3671 and 42-3672. Refs. passim.
Icebreakers, Electric power, Nuclear power, Propellers, Design, Ice navigation.

42-3671
Experimental studies of accuracy of the ultralong wave radio navigation system *Omega* in the Antarctic. [Eksperimental'nye issledovaniia pogreshnosteĭ sverkhdlinnovolnovoĭ RNS "Omega" v Antarktike],
Kalinskiĭ, S.I., Avtomatizatsiia sudovykh proizvodstvennykh protsessov (Automation of industrial shipbuilding processes) edited by V.I. Peresypko, Leningrad, Transport, 1987, p.32-37, In Russian. 2 refs.
Sea ice, Radio waves, Ice navigation.
During the 31st Soviet Antarctic Expedition, signal distortion and attenuation of the radio navigation system *Omega* were investigated in the Antarctic. The influence of ice on radiowave propagation is discussed and shown on a chart compiled at latitude 70S. Preliminary electronic calculations show a reliable reception at Molodezhnaya Station of signals from stations in Liberia, Reunion I. and Argentina.

42-3672
Optimizing the combined performance of nuclear and electric propelling systems in atomic icebreakers. [Optimizatsiia rezhimov sovmestnoĭ raboty iadernoĭ energeticheskoĭ i grebnoĭ elektricheskoĭ ustanovok atomnogo ledokola],
Golovnia, N.V., Avtomatizatsiia sudovykh proizvodstvennykh protsessov (Automation of industrial ship-building processes) edited by V.I. Peresypko, Leningrad, Transport, 1987, p.67-69, In Russian.
Ice navigation, Icebreakers, Arctic Ocean.

42-3673
Summary and analyses of surface mass balance compilations for Antarctica, 1960-1985.
Giovinetto, M.B., et al, *Ohio State University. Byrd Polar Research Center. Report,* 1987, No.1, 90p., Refs. p.61-68.
Bull, C.
Data processing, Mass balance, Ice surface, Mapping, Polar regions.
An analytical review is given of twenty-four compilations of surface mass balance for Antarctica produced between 1960 and 1985, with emphasis on their chronological development and the growth of the point-specific data base from approximately 175 to more than 1500 locations, as reported in approximately 225 identified sources. It is shown that the data collected in Antarctica during the exploration phase of surface glaciology studies (1956-68) and reported in the years 1958-71, are widespread and remain a considerable contribution to our present knowledge of the surface balance on the continent. The compilations which appeared after 1971 illustrate that the data base has improved principally in the coastal zone, including the major ice shelves and inland areas near their grounding lines. Some selections of alternate data sets and interpolations thereof produce differences of approximately (-)25% to (-)75% in estimates of regional rates of surface balance for large areas. It is suggested that further improvement in the compilations may be achieved by making this selective approach rather than using all the available data. (Auth.)

42-3674
Paleoclimatic implications of the relationship between modern snowpack and late Pleistocene equilibrium-line altitudes in the mountains of the Great Basin, western U.S.A.
Zielinski, G.A., et al, *Arctic and alpine research,* May 1987, 19(2), p.127-134, 14 refs.
McCoy, W.D.
Paleoclimatology, Snow water equivalent, Snow accumulation.

42-3675
Needle-ice activity and the distribution of stem-rosette species in a Venezuelan páramo.
Pérez, F.L., *Arctic and alpine research,* May 1987, 19(2), p.135-153, Refs. p.150-153.
Ice needles, Soil structure, Venezuela.

42-3676
Frost-heave activity in the Mount Rae area, Canadian Rocky Mountains.
Smith, D.J., *Arctic and alpine research,* May 1987, 19(2), p.155-166, 29 refs.
Frost heave, Ice needles, Soil moisture, Soil creep, Canada—Alberta—Mount Rae.

42-3677
Some observations on the morphology and sedimentology of two active protalus ramparts, Lyngen, northern Norway.
Ballantyne, C.K., *Arctic and alpine research,* May 1987, 19(2), p.167-174, 23 refs.
Geomorphology, Periglacial processes, Rock streams, Norway—Lyngen.

42-3678
Crown forms and shoot elongation of white spruce at the treeline, Churchill, Manitoba, Canada.
Scott, P.A., et al, *Arctic and alpine research,* May 1987, 19(2), p.175-186, 35 refs.
Bentley, C.V., Fayle, D.C.F., Hansell, R.I.C.
Forest tundra, Forest lines, Plant physiology, Canada—Manitoba.

42-3679
Floristic structure of snowline vegetation in Central Himalaya, India.
Rawat, G.S., et al, *Arctic and alpine research,* May 1987, 19(2), p.195-201, 23 refs.
Pangtey, Y.P.S.
Plants (botany), Snow line, India—Himalaya Mountains.

42-3680
Dynamics of coupled marine ice stream-ice shelf systems and implications for the quaternary ice ages.
Muszynski, I., Evanston, Northwestern University, 1987, 85p., University Microfilms order No. DA8710369, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, July 1987, p.77.
Ice sheets, Glacier flow, Models, Climatic changes, Antarctica—West Antarctica.
A scale analysis of the flow of a marine ice stream coupled to a freely floating ice shelf is presented, in two dimensions and ignoring thermodynamic effects. With these limitations, the most important control of the dynamics of the ice stream is associated with first order buoyancy effects related to the density contrast between ice and seawater. The scale analysis is the basis for derivation of a simplified model of a fast flowing ice stream coupled to a freely floating ice shelf. A numerical model for this simplified ice stream-ice shelf system is presented, in which the ice stream is explicitly coupled to the ice shelf at the grounding line through the requirements of buoyancy and strain state continuity. The model predicts the thickness and velocity fields in the ice stream and ice shelf, as well as the position of the grounding line. Sensitivity of the model to the flow law constant of ice, to basal conditions, to the bedrock slope and to the mass flux at the upstream end of the ice stream is discussed. The response time of the model ice stream is very short, of the order of 500 to 1000 years, and is comparable to that of an ice shelf. The West Antarctic ice streams, which are the focal point of possible instability of the West Antarctic ice sheet, may thus be expected to react almost instantaneously to climatic perturbations or to changes in the dynamical state of the ice shelves into which they drain. (Auth. mod.)

42-3681
Methods of isotope geology. [Metody izotopnoĭ geologii],
Shukoliukov, IU.A., ed, Moscow, 1987, 316p. (2 vols.), In Russian. Refs. passim. For selected papers see 42-3682 through 42-3685.
Geology, Geochronology, Isotope analysis, Radioactive isotopes, Carbon isotopes, Paleoecology, Paleobotany, Paleoclimatology, Permafrost, Radioactive age determination.

42-3682
Combined isotope and emanation surveys in the mapping of permafrost regions. [Opyt primeneniia izotopnykh issledovaniĭ v komplekse s emanatsionnoĭ s"emkoĭ pri kartirovochnykh rabotakh v raĭonakh vechnoĭ merzloty],
Bobrov, V.A., et al, Vsesoiuznaia shkola-seminar "Metody izotopnoĭ geologii", Zvenigorod, Dec. 7-13, 1987. Tezisy dokladov (All-Union workshop-seminar, methods of isotope geology, Dec. 7-13, 1987. Summaries of reports) edited by IU.A. Shukoliukov, Moscow, 1987, p.53-54, In Russian.
Zairi, N.M., Gushchin, V.N.
Fracturing, Geochemistry, Mining, Surveys, Mapping, Carbon isotopes, Permafrost, Isotope analysis, Igneous rocks.

42-3683
Possibilities of using isotope techniques in studying the growth of hailstones. [Vozmozhnosti issledovaniĭ rosta gradin izotopnymi metodami],
Kaviladze, M.Sh., et al, Vsesoiuznaia shkola-seminar "Metody izotopnoĭ geologii", Zvenigorod, Dec. 7-13, 1987. Tezisy dokladov (All-Union workshop-seminar, methods of isotope geology, Dec. 7-13, 1987. Summaries of reports) edited by IU.A. Shukoliukov, Moscow, 1987, p.111-112, In Russian.
Hailstones, Ice growth, Ice composition, Ice crystal structure, Isotope analysis, Models.

42-3684
Investigation procedures in the practice of geochronological studies of Late Pleistocene frozen strata, using serial radiocarbon dating, in the cryolithozone. [Metodicheskie issledovaniia v praktike geokhronologicheskogo izucheniia pozdneplеistotsenovykh merzlykh tolshch kriolitozony pri serĭinom radiouglerodnom datirovanii],
Kostiukevich, V.V., et al, Vsesoiuznaia shkola-seminar "Metody izotopnoĭ geologii", Zvenigorod, Dec. 7-13, 1987. Tezisy dokladov (All-Union workshop-seminar, methods of isotope geology, Dec. 7-13, 1987. Summaries of reports) edited by IU.A. Shukoliukov, Moscow, 1987, p.268-269, In Russian.
Dneprovskaia, O.V.
Geocryology, Permafrost, Radioactive age determination.

42-3685
Using radiocarbon dating in the Arctic and Subarctic regions (northeastern USSR). [Primenenie radiouglerodnogo metoda v arkticheskikh i subarkticheskikh raĭonakh (Severo-Vostok SSSR)],
Lozhkin, A.V., Vsesoiuznaia shkola-seminar "Metody izotopnoĭ geologii", Zvenigorod, Dec. 7-13, 1987. Tezisy dokladov (All-Union workshop-seminar, methods of isotope geology, Dec. 7-13, 1987. Summaries of reports) edited by IU.A. Shukoliukov, Moscow, 1987, p.277-279, In Russian.
Radioactive age determination, Permafrost, Paleoclimatology, Paleoecology, Paleobotany.

42-3686
Formation of HCl in the antarctic atmosphere.
Legrand, M.R., et al, *Journal of geophysical research,* Jun. 20, 1988, 93(D6), p.7153-7168, 73 refs.
Delmas, R.J.
Snow composition, Ice composition, Atmospheric composition, Aerosols.
A comprehensive glaciochemical study was conducted at several antarctic locations on the Antarctic Plateau and in more coastal regions of East Antarctica. The objective was to investigate the sulfur, nitrogen, and halogen atmospheric cycles in very remote areas. Spatio-temporal variations of the Cl/Na ratio are reported here for several hundred samples collected in snow pits or from firn and ice cores using contamination-free techniques. Details are reported on the sodium to chloride weight ratio; the major ions in antarctic precipitation and the release of gaseous HCl into the atmosphere; the weather conditions conducive to activating these processes; and the importance of the interaction between the sulfur and chlorine cycles in the antarctic atmosphere. (Auth. mod.)

42-3687
Attenuation rates of ocean waves in the marginal ice zone.
Wadhams, P., et al, *Journal of geophysical research,* Jun. 15, 1988, 93(C6), p.6799-6818, 26 refs.
Ocean waves, Attenuation, Ice edge, Sea ice.

42-3688
Short-term ice motion modeling with applications to the Beaufort Sea.
Thomson, N.R., et al, *Journal of geophysical research,* Jun. 15, 1988, 93(C6), p.6819-6836, 46 refs.
Sykes, J.F., McKenna, R.F.
Sea ice, Ice cover thickness, Ice creep, Mathematical models, Beaufort Sea.

42-3689
Satellite and aircraft passive microwave observations during the marginal ice zone experiment in 1984.
Gloersen, P., et al, *Journal of geophysical research,* Jun. 15, 1988, 93(C6), p.6837-6846, 8 refs.
Campbell, W.J.
Sea ice, Ice edge, Aerial surveys, Radiometry, Microwaves, Fram Strait.

42-3690
Penetrative radiolocation of sea and land ice with numerical processing of signals. [Pronikaiushchaia radiolokatsiia morskikh i presnovodnykh l'dov s tsifrovoi obrabotkoi signalov],
Bogorodskiĭ, V.V., et al, Leningrad, Gidrometeoizdat, 1987, 342p., In Russian. 92 refs.
Oganesian, A.G.
Airborne radar, Ice cover thickness, Sea ice, Land ice, Remote sensing, Radar echoes, Data processing, Computer applications, Computerized simulation, Computer programs.

42-3691
1986-87 Australian antarctic research program: initial field reports.
Australia. Antarctic Division, [Kingston, Tasmania, 1987], 228p., Refs. passim. For selected reports see A-37801, B-37770-73, B-3775-89, B-37802, C-37790, E-37764-65, E-37774, F-37767, H-37768-69, I-37791-93, I-37797-98, J-37794, K-37795-96, K-37799-37800.
Research projects, Ice, Antarctica.
Summaries are provided of the preliminary results of Australian research programs in earth science, environmental studies, glaciology, human biology and medicine, life sciences, mapping and surveying, meteorology, oceanography, and physics. Appendix I is a listing of geographical locations of field programs giving names of the PIs, research topic, discipline, and field period at Casey, Commonwealth Bay, Davis, Mawson, Macquarie I., Prydz Bay, Law Base/Larsemann Hills, Heard I., Scullin Monolith, and Edgeworth David/Bunger Hills. Appendix II contains PI contact information.

42-3692
Studies of till and moraine formation and other glaciogeological observations made during ANARE Voyage 6.
Lundqvist, J., 1986-87 Australian antarctic research program: initial field reports, compiled by the Antarctic Division, [Kingston, Tasmania, 1987], p.25-27, 4 refs.
Moraines, Glacial geology, Glacial deposits.
The purpose of the study was to obtain a better understanding of the differences between till formation in dry polar regions and in wet warmer areas. Results show the following: confirmation of till formation at sublimation of ice, the importance of folding for formation of so-called shear-moraines, the very low content of debris in cold-based ice in the areas visited, the importance of supraglacial run-off compared to subglacial in these areas, indications that the antarctic ice cap in these areas was earlier more than 100 m thicker than today, and the small amount of debris incorporated at the base of the fast-moving, warm-based glaciers studied on Heard I. (Auth. mod.)

42-3693
Automatic weather stations.
Allison, I., et al, 1986-87 Australian antarctic research program: initial field reports, compiled by the Antarctic Division, [Kingston, Tasmania, 1987], p.157-159, 5 refs.
Morrissy, J.V.
Weather stations, Snowdrifts, Polar regions, Antarctica—Casey Station.
During 1986, 3 new automatic weather stations (AWS) were installed inland of Casey Station by the wintering glaciology traverse party. The location and operating period of all AWS under this program are summarized. The stations measure air pressure, air temperature and wind speed 1 m, 2 m and 4 m above surface, wind direction, snow temperatures at 0.1 m, 1 m, 3 m and 10 m depth, and incoming short wave radiation. Data are relayed from the AWS almost every hour and the majority of data received have been of high quality. Data from all AWS are received monthly on a digital tape. These data are processed and edited to produce both detailed and mean climatic data files of meteorological variables. (Auth.)

42-3694
Floating ports: design and construction practices.
Tsinker, G.P., Houston, TX, Gulf Publishing Co., 1986, 380p. (Pertinent p. 98-112, 340-353), Refs. passim.
Ports, Docks, Ice control, Floating structures, Ice loads, Design, Construction, Loads (forces).

42-3695
Ice is ice?.
Toliver, R.D., *Journal of environmental sciences,* May-June 1988, 31(3), p.31-33, 8 refs.
Glaze, Icing, Precipitation (meteorology), Equipment.

42-3696
Effective permittivity of dielectric mixtures.
Sihvola, A.H., et al, *IEEE transactions on geoscience and remote sensing,* July 1988, 26(4), p.420-429, 25 refs.
Kong, J.A.
Snow electrical properties, Ice electrical properties, Sea ice.

42-3697
Three-dimensional imaging of objects in accumulated snow using multifrequency holography.
Sakamoto, Y., et al, *IEEE transactions on geoscience and remote sensing,* July 1988, 26(4), p.430-436, 10 refs.
Tajiri, K., Sawai, T., Aoki, Y.
Detection, Microwaves, Avalanche deposits.

42-3698
Formation of zirconia fibres on unidirectional freezing of a gel.
Kokubo, T., et al, *Journal of materials science,* Mar. 1988, 23(3), p.1126-1130, 6 refs.
Teranishi, Y., Maki, T., Sakka, S.
Solutions, Freezing.

42-3699
Freeze-thaw durability and deicer salt scaling resistance of a 0,25 water-cement ratio concrete.
Foy, C., et al, *Cement and concrete research,* Jul. 1988, 18(4), p.604-614, 7 refs.
Pigeon, M., Banthia, N.
Concrete durability, Freeze thaw cycles, Salting, Water cement ratio.

42-3700
Hydrodynamics of ice mass near large offsore structure.
Isaacson, M., et al, *Journal of waterway, port, coastal, and ocean engineering,* Jul. 1988, 114(4), p.487-502, 13 refs.
Cheung, K.F.
Sea ice, Offshore structures, Hydrodynamics, Mathematical models.

42-3701
Note on chimney formation in ice edge regions.
Häkkinen, S., *Journal of geophysical research,* Jul. 15, 1988, 93(C7), p.8279-8282, 25 refs.
Ice edge, Water chemistry, Water temperature, Thermodynamics, Wind factors, Greenland Sea.

42-3702
Friction of ice.
Beeman, M., et al, *Journal of geophysical research,* Jul. 10, 1988, 93(B7), p.7625-7633, 26 refs.
Durham, W.B., Kirby, S.H.
Ice friction, Ice mechanics, Ice strength, Compressive properties, Laboratory techniques, Extraterrestrial ice.

42-3703
Climate simulations for 9000 years before present: seasonal variations and effect of the Laurentide Ice Sheet.
Mitchell, J.F.B., et al, *Journal of geophysical research,* Jul. 20, 1988, 93(D7), p.8283-8303, 61 refs.
Grahame, N.S., Needham, K.J.
Climate, Models, Ice cover effect, Atmospheric circulation, Water temperature.

42-3704
Insoluble particles in antarctic ice: background aerosol size distribution and diatom concentration.
Ram, M., et al, *Journal of geophysical research,* Jul. 20, 1988, 93(D7), p.8378-8382, 15 refs.
Gayley, R.I., Petit, J.R.
Aerosols, Particle size distribution, Ice sheets, Antarctica—Wilkes Land.
We have measured insoluble particle size distributions covering the radius range 0.05-1.31 micron for six sections of ice core from Dome C, Antarctica. Two of the sections are from the Holocene, two are from the last glacial maximum (LGM), and another two are from the period that preceded it. We conclude that the Southern Hemisphere insoluble background aerosol size distribution, in the range of measurements used, has not changed significantly over the 26,000 year period studied. We also compared the concentration of diatoms in a sample of Holocene ice with that in two samples of LGM ice and found that the concentration of diatoms whose largest dimension was equal to or greater than 10 micron was 20 times larger during the LGM, the same as the ratio we measured for the concentration of insoluble particles. We interpret this to mean that the higher dust levels were mainly due to an increase in wind strength rather than to increased continental aridity. (Auth.)

42-3705
Theory of the optical properties of lake ice.
Mullen, P.C., et al, *Journal of geophysical research,* Jul. 20, 1988, 93(D7), p.8403-8414, 36 refs.
Warren, S.G.
Lake ice, Ice optics, Light scattering, Bubbles, Albedo.

42-3706
Creep of ice measured with a pressuremeter.
Kjartanson, B.H., et al, *Canadian geotechnical journal,* May 1988, 25(2), p.250-261, In English with French summary. 27 refs.
Shields, D.H., Domaschuk, L., Man, D.S.
Ice creep, Ice pressure, Measuring instruments.

42-3707
Subsoil investigation of ice lensing at the Calgary, Canada frost heave test facility.
Carlson, L.E., et al, *Canadian geotechnical journal,* May 1988, 25(2), p.307-319, In English with French summary. 8 refs.
Nixon, J.F.
Ice lenses, Ground ice, Frost heave, Pipelines.

42-3708
Formate, acetate and methanesulfonate measurements in antarctic ice: some geochemical implications.
Legrand, M., et al, *Atmospheric environment,* 1988, 22(5), p.1011-1017, 38 refs.
Saigne, C.
Ice cores, Ice composition, Antarctica—Adélie Coast.
Serious contamination problems are encountered when measuring organic acids in polar ice. Using an involved experimental protocol, methanesulfonate, formate and acetate have been investigated in ice core sections from Antarctica. With methanesulfonate concentrations of a few ppb, formate at a few tenths of ppb and acetate around the detection limit, the organic acids represent only a small percentage of the total acidity in antarctic ice. Analysis of the various possible sources indicates that methane is probably the major atmospheric precursor (via formaldehyde) of formate present in the ice. The significant presence of acetate in antarctic ice confirms the preponderant role played by marine biogenic emissions in the antarctic sulfate budget. The acetate ratio with respect to non-sea-salt sulfate is higher in antarctic precipitation than in marine aerosol. Finally, acetate in polar ice is suggested to be a more suitable parameter than excess sulfate for the study of marine biogenic emissions in the past. (Auth.)

42-3709
Ocean—an international workplace; Oceans '87 Conference; Proceedings.
Oceans '87 Conference, Halifax, Nova Scotia, Canada, sep. 28-Oct. 1, 1987, New York, Institute of Electrical and Electronics Engineers, 1987, 1772p. (5 vols.), Refs. passim. For selected papers see 42-3710 through 42-3729.
Oceanography, Sea ice, Ice loads, Offshore structures, Measuring instruments, Computer applications, Engineering, Ice conditions.

42-3710
1987 preseason iceberg survey and season prediction.
Osmer, S.R., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.1-4, 7 refs.
McRuer, H.
Ice conditions, Icebergs, Ice forecasting, Ice surveys, Seasonal variations, Canada.

42-3711
Innovations in dynamic modelling of iceberg drift.
Smith, S.D., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.5-10, 8 refs.
Donaldson, N.R.
Icebergs, Drift, Ice mechanics, Ocean currents, Models, Wind factors, Forecasting.

42-3712
Long-range forecasting of iceberg season severity.
Davidson, L.W., Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.11-16, 3 refs.
Icebergs, Seasonal variations, Ice conditions, Long range forecasting, Statistical analysis.

42-3713
Statistical properties of iceberg motion at the western entrance of Lancaster Sound.
Sanderson, B.G., Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.17-23, 14 refs.
Icebergs, Drift, Forecasting, Ice mechanics, Statistical analysis, Velocity.

42-3714
Ice forces on offshore structures; model and full scale comparison and future improvements.
Abdelnour, R., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.24-29, 4 refs.
Comfort, G., Pilkington, R., Wright, B.D.
Ice loads, Offshore structures, Ice models, Offshore drilling, Ice pressure, Ice conditions.

42-3715
Ice-induced dynamic behaviour of structures.
Nadreau, J.P., Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.30-34, 23 refs.
Ice loads, Impact strength, Ice strength, Structures, Dynamic loads, Vibration, Ice solid interface.

42-3716
M.V. *Arctic* vessel performance and trafficability program.
De Bastianti, P., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.35-41, 13 refs.
Wells, D.G.
Ice navigation, Ice conditions, Ice solid interface, Ships, Velocity.

42-3717
Nonlinear heave motion and wave forces on a partially submerged sphere.
Wishahy, M., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.42-48, 13 refs.
Pawlowski, J.S., Muggeridge, D.
Ice navigation, Ice conditions, Drift, Ice loads, Ocean waves, Icebergs, Ice mechanics.

42-3718
Improved SALARGOS buoy for deployments in polar seas.
Burke, S.P., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.49-53.
Morison, J.
Measuring instruments, Oceanography, Meteorological data, Ice conditions, Ocan waves, Electric equipment, Beaufort Sea.

42-3719
Arctic Remote Autonomous Measurement Platform.
Prada, K.E., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.54-58, 1 ref.
Koelsch, D.E., Witzell, W., Singer, R.
Floating structures, Drift stations, Data transmission, Platforms, Offshore structures, Floating ice, Ice mechanics.

42-3720
Deployment and recovery of oceanographic moorings through drifting sea ice.
Moorhouse, S.W., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.59-65, 6 refs.
Melling, H.
Moorings, Sea ice distribution, Drift, Ice conditions, Ice navigation, Logistics, Beaufort Sea.

42-3721
Mechanical design solutions for buoys to be used in the marginal ice zone.
Lilley, S.G., Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.66-69.
Offshore structures, Ice conditions, Ice edge, Buoys, Floating structures, Design, Penetration.

42-3722
Generation of a probabilistic climatology for arctic sea ice.
Perchanok, M., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.70-75, 9 refs.
Ferregut, C., Brown, R.
Glacial meteorology, Sea ice distribution, Ice conditions, Ice navigation, Climatology, Offshore structures, Statistical analysis.

42-3723
Winter MIZEX 87, operations overview.
Horn, D.A., Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.76-82, For another source see 42-1980. 4 refs.
Sea ice distribution, Ice edge, Remote sensing, Oceanography, Glacial meteorology, Ice physics, Snow physics, Marine biology.

42-3724
Automatic data acquisition system installed in offshore Canadian arctic well: monitoring precise temperatures by acoustic telemetry.
Judge, A., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.156-160, 12 refs.
Temperature measurement, Oil wells, Telemetering equipment, Temperature distribution, Acoustic measurement, Sea ice, Monitors, Canada.

42-3725
Development of thermistor chain buoys for use in ice infested waters.
Fowler, G.A., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.1. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.220-224, 3 refs.
Budgen, G.
Thermistors, Sea water freezing, Ice formation, Water temperature, Ice conditions, Ice forecasting, Freezeup.

42-3726
Water mass distributions in the Canadian Beaufort Sea.
Fissel, D.B., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.3. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.910-916, 14 refs.
Bradstreet, M.S.W., Moen, J.
Oceanography, Sea water, Mass flow, Temperature distribution, Water temperature, Salinity, Wind factors, Mapping, Beaufort Sea.

42-3727
Ocean drilling program.
Rabinowitz, P.D., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.3. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.1058-1063, 11 refs.
Offshore drilling, Research projects, Sea ice distribution, Ice conditions, Climatic factors, Oceanography, South Atlantic Ocean, Antarctica—Weddell Sea.
The Ocean Drilling Program recently completed its first 14 cruises (28 months) of scientific ocean drilling by addressing important scientific problems in many regions, including the Weddell Sea and Southern South Atlantic Ocean. During this period, the ship's drilling systems as well as the shipboard scientific laboratory complex have undergone a thorough testing, with modifications made as required. The scientific objects of our forthcoming 16-month Indian Ocean campaign are reported. (Auth. mod.)

42-3728
Canadian Sea Ice Information System CSIIS.
Guy, E.V., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.3. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.1085-1090.
Whittick, J.A.
Sea ice distribution, Research projects, Data processing, Ice conditions, Ice surveys, Canada.

42-3729
Effects of chemical dispersion on long-term weathering of crude oil in cold water.
Pelletier, E., et al, Oceans '87 Conference, Halifax, Nova Scotia, Canada, Sep. 28-Oct. 1, 1987. Proceedings, Vol.3. Ocean—an international workplace, New York, Institute of Electrical and Electronics Engineers, 1987, p.1620-1623, 9 refs.
Brochu, C., Desnoyers, J.E., Vandermeulen, J.H.
Oil spills, Dispersions, Ice cover effect, Weathering, Sea water, Crude oil.

42-3730
Controlling the deflection of slanted wells in western Siberia. [Upravlenie iskrivleniem naklonnykh skvazhin v Zapadnoĭ Sibiri],
Sushon, L.IA., et al, Moscow, Nedra, 1988, 124p., In Russian with abridged English table of contents enclosed. 11 refs.
Emel'ianov, P.V., Mullagaliev, R.T.
Permafrost, Swamps, Directional drilling.

42-3731
Concretes containing acetone formaldehyde resins. [Betony s dobavkoĭ atsetonoformal'degidnykh smoly],
Takhirov, M.K., Moscow, Strolizdat, 1988, 103p., In Russian with abridged English table of contents enclosed. 101 refs.
Concrete strength, Concrete freezing, Frost resistance, Concrete hardening, Concrete admixtures, Concrete aggregates.

42-3732
Numerical analysis of an NACA 0012 airfoil with leading-edge ice accretions.
Potapczuk, M.G., *Journal of aircraft*, Mar. 1988, 25(3), p.193-194, Synopsis of paper presented at the AIAA 25th Aerospace Sciences Meeting, Reno, Nev., Jan. 12-15, 1987. 6 refs.
Aircraft icing, Ice accretion.

42-3733
Analytical determination of propeller performance degradation due to ice accretion.
Miller, T.L., et al, *Journal of aircraft*, Nov. 1987, 24(11), p.768-775, 11 refs.
Korkan, K.D., Shaw, R.J.
Aircraft icing, Ice accretion, Propellers.

42-3734
Heater made from graphite composite material for potential deicing application.
Hung, C., et al, *Journal of aircraft*, Oct. 1987, 24(10), p.725-730, 18 refs.
Dillehay, M.E., Stahl, M.
Ice removal, Aircraft icing, Electric heating.

42-3735
Manoeuvering in ice.
Weiss, F., *Schiff & Hafen*, Aug. 1984, 36(8), p.74-78.
Ice navigation, Ice physics, Propellers.

42-3736
Measurement of the temporal fluctuations of cw tones propagated in the marginal ice zone.
Dahl, P.H., et al, *Acoustical Society of America. Journal*, June 1988, 83(6), p.2175-2179, 17 refs.
Baggeroer, A.B., Mikhalevsky, P.N., Dyer, I.
Subglacial observations, Ice edge, Underwater acoustics.

42-3737
Comparison of extraction techniques for munitions residues in soil.
Jenkins, T.F., et al, *Analytical chemistry*, May 1, 1987, 59(9), MP 2350, p.1326-1331, 23 refs.
Grant, C.L.
Soil pollution, Military operation, Soil composition, Chemical analysis, Countermeasures.

42-3738
Crystallographic effects during radiative melting of semitransparent materials.
Webb, B.W., et al, *Journal of thermophysics and heat transfer*, Oct. 1987, 1(4), p.313-320, 16 refs.
Viskanta, R.
Ice melting, Crystals, Radiant heating.

42-3739
Thermal boundary layer on a continuous moving plate with freezing.
Cheung, F.B., *Journal of thermophysics and heat transfer,* Oct. 1987, 1(4), p.335-342, 21 refs.
Ice accretion, Boundary layer, Freezing, Heat transfer.

42-3740
Hydrology of Alaskan wetlands, U.S.A: a review.
Ford, J., et al, *Arctic and alpine research,* Aug. 1987, 19(3), p.209-229, Refs. p.225-229.
Bedford, B.L.
Permafrost hydrology, Swamps, Snowmelt, Water balance, United States—Alaska.

42-3741
Some characteristics of turbulent transfer over alpine surfaces during the snowmelt-growing season: Niwot Ridge, Front Range, Colorado, U.S.A.
Olyphant, G.A., et al, *Arctic and alpine research,* Aug. 1987, 19(3), p.261-269, 10 refs.
Isard, S.A.
Turbulent flow, Snow surface, Snowmelt, United States—Colorado—Niwot Ridge.

42-3742
Fourier series approach to skyline generalization for surface irradiance estimates in alpine terrain.
Arnfield, A.J., *Arctic and alpine research,* Aug. 1987, 19(3), p.270-278, 42 refs.
Solar radiation, Radiation balance, Slope orientation, United States—Wyoming—Teton Range.

42-3743
Computational method for prediction and regionalization of permafrost.
Nelson, F.E., et al, *Arctic and alpine research,* Aug. 1987, 19(3), p.279-288, 40 refs.
Outcalt, S.I.
Permafrost forecasting, Permafrost distribution, Degree days.

42-3744
Freeze-thaw cycle of a subarctic fen, northern Quebec, Canada.
Kingsbury, C.M., et al, *Arctic and alpine research,* Aug. 1987, 19(3), p.289-295, 30 refs.
Moore, T.R.
Freeze thaw cycles, Peat, Ground ice.

42-3745
Neoglacial glacier variations in northern Iceland: examples from the Eyjafjördur area.
Caseldine, C.J., *Arctic and alpine research,* Aug. 1987, 19(3), p.296-304, 39 refs.
Glacier oscillation, Paleoclimatology, Iceland—Eyjafjördur.

42-3746
Physicochemical limnology of meromictic saline Lake Sophia, Canadian Arctic Archipelago.
Ouellet, M., et al, *Arctic and alpine research,* Aug. 1987, 19(3), p.305-312, 50 refs.
Bisson, M., Pagé, P., Dionne, M.
Lake water, Water chemistry, Water temperature.
The basic physicochemical characteristics of a Canadian High Arctic deep meromictic and mesothermic lake with an open drainage system are presented. The monimolimnetic salinity of Lake Sophia reaches 58% and its mid-water temperature is perennially at 12 deg C. This type lake is most commonly found in Antarctica, while so far only two have been reported from the Canadian Arctic. The salts of the monimolimnion seem to have originated during the postglacial marine submergence mainly from marine waters trapped within the ancient lake basin and beneath the surface of the area. It is most likely that the concentration of salts by freezing-out of ions from the underground relict pore seawater was progressively brought about by the encroachment of permafrost on the newly uplifted lake surrounding. The water insulating layer could have caused the formation of a talik beneath the lake basin, which subsequently favored the displacement of the underground saline water toward the bottom of the lake. With time, some of the underground inflowing waters would have migrated to the mixolimnion, there to be diluted with slightly mineralized meteoric waters before leaving the lake through the outflowing creek. (Auth.)

42-3747
Habitat use by nesting water pipits *Anthus spinoletta:* a test of the snowfield hypothesis.
Hendricks, P., *Arctic and alpine research,* Aug. 1987, 19(3), p.313-320, 22 refs.
Snow cover effect, Animals.

42-3748
Bedload transport and sediment yield in the Onyx River, Antarctica.
Mosley, M.P., *Earth surface processes and landforms,* Feb. 1988, 13(1), p.51-67, 18 refs.
River flow, Sediment transport, Sands, Antarctica—Onyx River.
Bedload transport measurements were made in a braided reach of the Onyx River during summer 1984/85. Transport was predominantly of sand in the form of dunes, which moved in a band down the centre of the channels, the perimeters of which were composed of a gravel pavement created during short duration high flows in earlier years. Transport rates at-a-point and past-a-cross-section were highly variable in space and time, even under conditions of constant discharge, and it was inferred that many factors other than hydraulic conditions—particularly sediment supply—control transport rates. An empirical power function relationship between sediment discharge and water discharge was used to predict an average annual total sediment discharge of 3400 t/y past the study reach. This gives a specific sediment yield of 5.9 t/sq km/yr, which is two orders of magnitude less than values for Arctic and Alpine proglacial rivers, and confirms earlier conclusions that sedimentation rates on Antarctic sandur are much lower than in the Arctic. (Auth.)

42-3749
Climate forcing implications from Vostok ice-core sulphate data.
Legrand, M.R., et al, *Nature,* Aug. 4, 1988, 334(6181), p.418-420, 18 refs.
Delmas, R.J., Charlson, R.J.
Ice cores, Ice composition, Climate, Condensation nuclei, Clouds (meteorology).
The hypothesis that the number concentration of cloud condensation nuclei (mainly the sulphate particles produced by the oxidation of dimethylsulphide emitted from the ocean) influences marine stratus cloud albedo, and hence global climate, is examined using the non-seasalt sulphate profile that was recently obtained along the 160 kyr Vostok (Antarctica) ice core. The deduced 20-46% increase in nss sulphate content in the antarctic atmosphere during full glacial (compared with interglacial) conditions is consistent with higher dimethylsulphide emissions from marine biota productivity. Similar spectral features and correlation of CO2 and nss sulphate suggest a global significance for these changes, and a possible link between CO2 and dimethylsulphide emissions. Assuming that the global average number population of cloud condensation nuclei is proportional to nss sulphate in the antarctic atmosphere, a global radiative cooling at the surface of up to 1 K would result, reinforcing the effect of CO2 (about 0.6K) and of total insolation changes (0.2K). (Auth.)

42-3750
Reactions on ice crystals.
Pyle, J., *Nature,* Jul. 28, 1988, 334(6180), p.297.
Ice crystals, Clouds (meteorology), Chemical properties.
Results from several Antarctic observations, including the US Airborne Antarctic Ozone Expedition in Aug.-Sep. 1987 were discussed at the Polar Ozone Workshop at Aspen, CO, 9-13 May 1988. They show that the springtime ozone level in the polar stratosphere fell to 40 per cent of the values measured in the 1970s, the strongest depletion yet recorded. Other data confirm the leading role played by heterogeneous chemistry on ice particles in the stratospheric clouds in producing the ozone hole. Measurements from the Arctic stratosphere show ozone depletion could happen there, although no strong effect has yet been observed. (Auth.)

42-3751
Answer lies in the ice.
Wolff, E., *Geographical magazine,* Feb. 1987, 59(2), p.73-77.
Ice cores, Ice composition, Paleoclimatology, Polar regions.
Polar ice core drilling and analysis techniques, for evidence of climatic changes through history, are described. Generalized trends in global air temperature during the past million years are shown on a chart, indicating that climate is in a state of perpetual change. A record depth of 2083 m reached by a Soviet drilling team at Vostok Station, giving 150,000 years of climatic history including all of the last interglacial, is reported.

42-3752
Ice runways in the Heritage Range, Antarctica.
Swithinbank, C., Cambridge, 1987, 16p. + appendices, 3 refs.
Ice runways, Ice surveys, Site surveys, Antarctica—Heritage Range.
A reconnaissance of all blue icefields in the Ellsworth Mountains was carried out; the NASA Landsat images revealed that all icefields of significance were confined to the Heritage Range. It is concluded that the Patriot Hills icefield offers the best prospects for ice runways in the area surveyed. The advantages of that location are listed, and some recommendations concerning construction, maintenance and use of the icefield are offered.

42-3753
Investigation of dust bands from blue ice fields in the Lewis Cliff (Beardmore) area, Antarctica: a progress report.
Koeberl, C., et al, NIPR Symposium on Antarctic Meteorites, Tokyo, National Institute of Polar Research, 1988, p.291-309, 36 refs.
Yanai, K., Cassidy, W.A., Schutt, J.W.
Ice sheets, Dust, Falling bodies, Chemical composition, Antarctica—Lewis Cliff.
Dust, which has been isolated from dust band samples from blue ice areas in the Lewis Cliff/Walcott Neve area (Beardmore region), was studied to determine petrographic characteristics and chemical compositions. One sample has an average grain size of around 0.5 mm, and is rather different from the others in its abundances of trace elements. The REE pattern and some other trace element ratios of that sample suggest it is a sediment from the local Beacon Supergroup, which has been scooped up from the ground by ice movement. The other 5 samples which were investigated have very small grain sizes (20 micron), and abundant glass shards. Major element data on the glass shards (and some feldspar crystals, which are also present in the dust band samples) allow the conclusion that they have originated from an alkaline volcano. The chemical composition of the glasses is highly variable, some showing basanitic composition, some showing trachytic or peralkaline K-trachytic composition. The silica *vs.* sum of alkalis plot shows that the Lewis Cliff samples are different from dust collected at the Allan Hills, but that there is a close similarity with volcanic material from The Pleiades, Northern Victoria Land. (Auth. mod.)

42-3754
Data report of RV "Polarstern" cruise ARK IV/1, 1987 to the Arctic and polar fronts.
Hirche, H.-J., ed, *Berichte zur Polarforschung,* 1987, No.44, 226p.
Oceanographic surveys, Sea water, Water chemistry, Thermal conductivity, Biomass, Marine biology.

42-3755
Eastern Weddell Sea drifting buoy data set of the Winter Weddell Sea Project (WWSP) 1986.
Hoeber, H., et al, *Berichte zur Polarforschung,* 1987, No.37, 108p., 8 refs.
Gube-Lenhardt, M.
Drift stations, Remote sensing, Sea ice, Antarctica—Weddell Sea.
As part of the Winter Weddell Sea Project 1986, a set of 10 drifting ARGOS buoys was deployed in the sea ice region of the southern Atlantic Ocean around Maud Rise. Starting in July-Aug. 1986 these buoys provided data through the melting period until—at least—Apr. 1987. Sensors deployed were air pressure, air temperature, snow/ice temperature, wind speed and direction and —on some of the stations—current speed and direction at 10 m depth. The main objective of the experiment was accomplished: defining in detail the atmospheric forcing function for ice drift and the dynamics of the oceanic mixed layer. Geostrophic wind around Maud Rise and its variability can be computed and wind stress at the ice surface can be derived. Wind observations will help in deriving necessary universal fuctions or verifing the models. From the position data together with relative current observations, the momentum flux through the ice into the water and the forcing of the mixed layer can be determined. Modelling ice formation, ice drift and mixed layer processes requires a good knowledge of the atmospheric boundary layer, in particular of the surface momentum flux under the condition of stable stratification above the sea ice. The temperature observations reveal a characteristic thermal structure showing large scale advection as long as transient low pressure systems are large enough to cover the thermally contrasting regions above sea ice and open water, respectively. This changes as the sea ice extent becomes larger and the scale of cyclones no longer reflects the thermal contrast internally. (Auth. mod.)

42-3756
Some problems of cloud physics. Weather modification. Collected papers. [Voprosy fiziki oblakov. Aktivnye vozdeĭstviia. Sbornik statei],
Stepanenko, V.D., ed, Leningrad, Gidrometeoizdat, 1987, 144p., In Russian. For selected papers see 42-3757 through 42-3767. Refs. passim.
Selezneva, E.S., ed, Mazin, I.P., ed, Gromova, T.N., ed, Dovgaliuk, IU.A., ed.
Smoke generators, Supercooled clouds, Weather modification, Cloud seeding, Supercooled fog, Fog dispersal, Artificial nucleation, Dry ice (trademark), Silver iodide, Snowfall, Aerosols, Electric fields, Impact, Freezing.

42-3757
Frequency of heavy snowfalls and studies of the possibilities of their control in the Leningrad area. [Povtoriaemost' obil'nykh snegopadov i issledovanie vozmozhnosti ikh regulirovaniia v raĭone Leningrada],
Nikandrov, V.IA., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.31-36. In Russian with English summary. 6 refs.
Orenburgskaia, E.V.
Snowfall, Cloud seeding, Weather modification.

42-3758
Microstructure of cirrus clouds. [O mikrostrukture kristallicheskikh oblakov],
Mazin, I.P., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.37-49, In Russian with English summary. 18 refs.
Nevzorov, A.N.
Meteorology, Clouds (meteorology), Ice crystals, Microstructure.

42-3759
Seeding of supercooled clouds and fog with nucleating agents. [Sovremennoe sostoianie issledovaniĭ po iskusstvennomu vozdeĭstviiu na pereokhlazhdennye oblaka i tumany s ispol'zovaniem khladoreagentov],
Krasnovskaia, L.I., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.50-64, In Russian with English summary. 23 refs.
Seregin, IU.A., Khvorost'ianov, V.I.
Weather modification, Cloud dissipation, Cloud seeding, Nucleating agents.

42-3760
Experimental studies of artificial crystallization and dissipation of supercooled stratus clouds and fog. [Eksperimental'nye issledovaniia protsessa iskusstvennoĭ kristallizatsii i rasseianiia pereokhlazhdennykh sloistoobraznykh oblakov i tumanov],
Polovina, I.P., Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.65-73, In Russian with English summary. 6 refs.
Supercooled clouds, Cloud dissipation, Supercooled fog, Fog dispersal, Artificial nucleation.

42-3761
Estimation of the maximum expenditure of dry ice for seeding overcooled clouds allowing for the interaction between granules. [Otsenka predel'nogo raskhoda tverdoĭ uglekisloty pri vozdeĭstvii na pereokhlazhdennye oblaka s uchetom vzaimodeĭstviia granul],
Bulkov, M.V., Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.74-81, In Russian with English summary. 11 refs.
Weather modification, Supercooled clouds, Cloud seeding, Dry ice (trademark).

42-3762
Dispersion of supercooled stratiform clouds. [Rasseianie moshchnykh pereokhlazhdennykh sloistoobraznykh oblakov],
Bakhanov, V.P., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.82-93, In Russian with English summary. 21 refs.
Voronov, G.S., Manzhara, A.A.
Mathematical models, Supercooled clouds, Cloud seeding, Dry ice (trademark).

42-3763
Ice crystal formation on particles of complex chemical composition. [Obrazovanie ledianykh kristallov na chastitsakh slozhnogo khimicheskogo sostava],
Plaude, N.O., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.94-102, In Russian with English summary. 11 refs.
Sosnikova, E.V.
Supercooled clouds, Cloud seeding, Aerosols, Smoke generators, Silver iodide.

42-3764
Formation of ice-forming aerosols with optimal size-distribution characteristics. [O formirovanii l'doobrazuiushchikh aerozoleĭ s optimal'nymi dispersnymi kharakteristikami],
Volkovitskiĭ, O.A., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.103-111, In Russian with English summary. 9 refs.
Kim, N.S., Shkodkin, A.V.
Aerosols, Ice nuclei, Ice formation, Cloud seeding.

42-3765
Laboratory investigations of polymolecular water evaporation. [Laboratornye issledovaniia polimolekuliarnogo isparenii vody],
Mikhaĭlov, E.F., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.124-130, In Russian with English summary. 20 refs.
Ivlev, L.S.
Cloud droplets, Phase transformations, Cloud electrification, Mathematical models.

42-3766
Studying the process of convective clouds crystallization after seeding. [Rezul'taty issledovaniĭ protsessa kristallizatsii konvektivnykh oblakov posle vozdeĭstviĭ],
Bekriaev, V.I., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.131-136, In Russian with English summary. 13 refs.
Ponomarev, IU.P., Sin'kevich, A.A., Chubarina, E.V.
Cloud seeding, Convection, Aerosols, Ice formation, Ice nuclei.

42-3767
Studying the process of water drops freezing in electric fields. [Issledovanie protsessa zamerzaniia kapel' vody v elektricheskikh poliakh],
Klingo, V.V., et al, Voprosy fiziki oblakov. Aktivnye vozdeĭstviia (Some problems of cloud physics. Weather modification) edited by V.D. Stepanenko et al, Leningrad, Gidrometeoizdat, 1987, p.137-142, In Russian with English summary. 7 refs.
Shlykov, V.V.
Electric fields, Impact, Freezing, Supercooled clouds, Supercooled fog.

42-3768
Paleogeographic conditions at the time the Edoma series were formed in the Yana-Indigirka lowland. [Paleogeograficheskaia obstanovka vremeni formirovaniia edomnoĭ svity IAno-Indigirskoĭ nizmennosti],
Ovander, M.G., et al, Chetvertichnyĭ period Severo-Vostoka Azii (Quaternary period of northeastern Asia) edited by V.P. Pokhialainen, Magadan, Severo-Vostochnyĭ kompleksnyĭ nauch.-issled. inst., 1987, p.119-134, In Russian. 7 refs.
Lozhkin, A.V., Bashlavin, D.K., Zhigulevtseva, S.N.
Frozen fines, Loess, Permafrost structure, Ice veins, Climatology, Vegetation, Radioactive age determination, Palynology, Edoma complex.

42-3769
Studying stresses in marginal parts of a coal layer with a hard, perennially frozen roof resistant to caving. [Issledovanie napriazhennogo sostoianiia krayevykh chastei ugol'nogo plasta s trudnoobrushaemymi mnogoletnemerzlymi porodami krovli],
Popov, S.F., Razrabotka ugol'nykh plastov podzemnym sposobom. Nauchnye soobshcheniia (Underground method of coal excavation. Scientific reports) edited by A.D. Ignat'ev, Moscow, Institut gornogo dela, 1987, p.97-102, In Russian.
Mining, Stresses, Coal, Permafrost, Frozen rock strength.

42-3770
Manual for navigation officiers. [Spravochnaia knizhka shturmana],
Burkhanov, M.V., Moscow, Transport, 1986, 181p., In Russian with abridged English table of contents enclosed. 32 refs.
Ice navigation, Manuals, Icebreakers, Meteorology, Sea ice distribution, Ice cover thickness, Ice growth, Ice breakup, Ice melting.

42-3771
7th Symposium on the Physics and Chemistry of Ice, 1-5 September, 1986, Grenoble (France); [Proceedings].
Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), (C1) 707p., With French summaries. Refs. passim. For individual papers see 41-3957 through 41-3959 and 42-3772 through 42-3855, or F-37895 through F-37900.
Ice physics, Ice composition, Ice crystal structure, Chemical analysis, Meetings, Low temperature research, Temperature effects, Ice deformation.
This symposium, the ninth in a series of quadrennial symposia, attracted some 120 researchers from 20 countries. The papers document the latest findings in ice physics and chemistry, which have been reinforced by recent interdisciplinary studies.

42-3772
Geometry and orientation of the water molecule in ice Ih.
Kuhs, W.F., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.3-8, 10 refs., With French summary.
Lehmann, M.S.
Ice crystal structure, Molecular structure, Neutron diffraction, Low temperature research, Ice spectroscopy, Heavy water, Hydrogen bonds, Water.

42-3773
Metropolis Monte Carlo x-ray and neutron diffraction in ice Ih.
Deutsch, P.W., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.9-14, 16 refs., With French summary.
Ice crystal structure, X ray diffraction, Neutron diffraction, Low temperature research, Water, Ice spectroscopy.

42-3774
Raman scattering tensors for ice I(h).
Ziemczonek, L., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.15-21, 10 refs., With French summary.
Ice crystal structure, Light scattering, Molecular structure, Ice spectroscopy, Analysis (mathematics).

42-3775
Elastic constants of ice Ih, up to 2.8 kbar, by Brillouin spectroscopy.
Gagnon, R.E., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.23-28, 14 refs., With French summary.
Kiefte, H., Clouter, M.J., Whalley, E.
Ice elasticity, Ice spectroscopy, Ice crystal structure, Pressure, Experimentation, Temperature effects.

42-3776
Acoustic velocities in ice Ih, II, III, V and VI, by Brillouin spectroscopy.
Gagnon, R.E., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.29-35, 11 refs., With French summary.
Kiefte, H., Clouter, M.J., Whalley, E.
Ice acoustics, High pressure ice, Ice spectroscopy, Ice density, Ice crystal structure, Velocity, Hydrogen bonds, Experimentation.

42-3777
Re-correlation of the vibrational spectra and crystallographic data for the various ice polymorphs.
Minčeva-Šukarova, B., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.37-43, 26 refs., With French summary.
Slark, G.E., Sherman, W.F., Wilkinson, G.R.
Ice crystal structure, Ice spectroscopy, High pressure ice, Pressure, Thermodynamics, Temperature effects.

42-3778
Quantum mechanical examination of orientational defects in ice Ih.
Plummer, P.L.M., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.45-51, 12 refs., With French summary.
Ice structure, Molecular structure, Ice water interface, Models, Defects, Water.

42-3779
Small amplitude collective proton motions in water networks—application to ices, clathrates and aqueous solutions.
Green, J.L., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.53-58, 31 refs., With French summary.
Lacey, A.R., Sceats, M.G.
Ice crystal structure, Ice spectroscopy, Proton transport, Clathrates, Solutions, Water, Temperature effects.

42-3780
Studies of U.V. stimulated luminescence from H2O ice.
Litjens, R.A.J., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.59-65, 20 refs., With French summary.
Quickenden, T.I.
Ice crystal structure, Luminescence, Ice optics, Ultraviolet radiation, Low temperature research.

42-3781
Investigation of the luminescence emitted by pulse-irradiated D2O ice.
Vernon, C.F., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.67-73, 11 refs., With French summary.
Quickenden, T.I., Sangster, D.F.
Ice crystal structure, Luminescence, Ice optics, Electron irradiation, Experimentation, Heavy water, Ice spectroscopy, Heavy water.

42-3782
Chemistry of antarctic snow and ice.
Legrand, M., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.77-86, 21 refs., With French summary.
Ice composition, Snow composition, Impurities, Climatic changes, Chemical analysis, Meltwater, Ions, Snow impurities, Variations.
About 1000 samples of snow and ice from coastal and central areas of East and West Antarctica were studied. These samples cover different time periods up to 30,000 yrs. B.P. In the meltwater major ions were measured, using stringent contamination free techniques. A very close balance between anions and cations is observed, making it possible to draw up the list of chemical compounds present in antarctic snow and ice. In coastal areas, snow contains essentially sea salt and two acids: HNO3 and H2SO4. In more central areas, the sea salt contribution decreases strongly. Acids represent the preponderant part (HNO3, H2SO4 and sometimes HCl being present in variable proportions depending on the location). These soluble species represent the greatest part of total impurities (90 to 95% by mass). The chemistry of the ice deposited during the late glacial age (18,000 years B.P.) is more intricate. Indeed, insoluble species (i.e. aluminosilicates) content is enhanced (50% by mass, against 5 to 10% during the Holocene). Besides, marine (sea salt) and terrestrial (CaSO4, MgSO4) contributions increase whereas acids contribution remains stable. Sea salt (55%), terrestrial species (25%) and acids (20%) is a typical composition of soluble impurities in this aged ice. (Auth. mod.)

42-3783
Theoretical and experimental study of pure and doped ice Ih by the method of thermally stimulated depolarization.
Zaretskiĭ, A.V., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.87-91, 12 refs., With French summary.
Doped ice, Ice electrical properties, Polarization (waves), Ice spectrometry, Ions, Analysis (mathematics).

42-3784
Theoretical and experimental study of ice in the presence of a space charge.
Zaretskiĭ, A.V., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.93-98, 10 refs., With French summary.
Petrenko, V.F., Ryzhkin, I.A., Trukhanov, A.V.
Ice electrical properties, Electric charge, Protons, Ions, Mechanical properties, Theories, Analysis (mathematics).

42-3785
Photoelectrical phenomena at the ice-semiconductor interface.
Chesnokov, V.A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.99-103, 5 refs., With French summary.
Petrenko, V.F., Ryzhkin, I.A., Zaretskiĭ, A.V.
Ice electrical properties, Illuminating, Electric fields, Electrical resistivity, Ions, Defects, Ice solid interface.

42-3786
Investigation of the proton-exchange processes at the ice-metal interface.
Khusnatdinov, N.N., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.105-108, 6 refs., With French summary.
Petrenko, V.F., Zaretskiĭ, A.V.
Ice electrical properties, Ice solid interface, Metals, Proton transport, Hydrogen, Analysis (mathematics).

42-3787
Pseudopiezoelectric effects in ice.
Evtushenko, A.A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.109-113, 7 refs., With French summary.
Maeno, N., Petrenko, V.F., Ryzhkin, I.A.
Ice electrical properties, Ice elasticity, Impurities, Stresses, Temperature effects, Analysis (mathematics).

42-3788
Ice field transistor.
Petrenko, V.F., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.115-119, 7 refs., With French summary.
Maeno, N.
Ice electrical properties, Electric charge, Electrical resistivity, Surface energy, Ice surface, Analysis (mathematics).

42-3789
Electric characteristics of point defects in HCl-doped ice.
Takei, I., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.121-126, 20 refs., With French summary.
Maeno, N.
Ice electrical properties, Doped ice, Ions, Ice resistivity, Defects, Temperature effects.

42-3790
Study of the multiplicity of dielectric relaxation times in ice at low temperatures.
Apekis, L., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.127-133, 32 refs., With French summary.
Pissis, P.
Ice electrical properties, Low temperature research, Ice relaxation, Dielectric properties, Polarization (charge separation), Ice crystal structure.

42-3791
Comparative study of the dielectric behaviour of ice in water-containing systems.
Pissis, P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.135-141, 19 refs., With French summary.
Apekis, L., Christodoulides, C.
Ice electrical properties, Ice relaxation, Dielectric properties, Ice water interface, Polarization (charge separation), Hydrates, Temperature effects.

42-3792
Dielectric properties of strained ice. 1: Effect of plastic straining.
Itagaki, K., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), MP 2356, Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.143-147, 5 refs., With French summary.
Ice electrical properties, Ice relaxation, Ice plasticity, Dielectric properties, Strain tests.
The effect of plastic straining on single crystals of ice was examined. As strain increased plastically, relaxation strength increased linearly as the relaxation time increased.

42-3793
Dielectric properties of strained ice. 2: Effect of sample preparation method.
Itagaki, K., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl), MP 2357, Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.149-153, 5 refs., With French summary.
Lemieux, G.E.
Ice electrical properties, Ice crystal structure, Ice sampling, Dielectric properties, Strain tests, Freezing.
Since most commonly used sample preparation methods for ice dielectric studies involve rather heavy mechanical straining, the effects of straining were studied and compared with more strain-free sample preparation methods.

42-3794
New technique for dielectric logging of antarctic ice cores.
Moore, J.C., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.155-160, 11 refs., With French summary.
Paren, J.G.
Ice electrical properties, Ice cores, Dielectric properties, Chemical analysis, Isotope analysis, Antarctica --Dolleman Island.
A system has been developed for rapid dielectric profiling of ice cores at the time of drilling. Data from the top 38 m of a 133 m core from Dolleman Island, Antarctic Peninsula, show that this method is capable of providing detailed dielectric parameters comparable to those obtained by conventional techniques. Chemical and isotopic analysis of the core is needed before establishing correlations between the dielectric behavior and other parameters. (Auth.)

42-3795
Dislocation mechanisms of plastic deformation of ice.
Fukuda, A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.163-173, 23 refs., With French summary.
Hondoh, T., Higashi, A
Ice deformation, Ice plasticity, Dislocations (materials), Shear stress, X ray analysis.

42-3796
Study of dislocation glide in ice by synchrotron radiation x-ray topography.
Ahmad, S., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.175-181, 12 refs., With French summary.
Ohtomo, M., Whitworth, R.W.
Ice deformation, Dislocations (materials), X ray analysis, Sliding, Ice plasticity, Velocity.

42-3797
Self-interstitials in ice.
Hondoh, T., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.183-187, 12 refs., With French summary.
Azuma, K., Higashi, A.
Interstitial ice, Ice crystal structure, Ice nuclei, Diffusion, Defects, X ray analysis, Ice physics, Temperature effects.

42-3798
Grain boundary sliding in ice.
Ignat, M., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.189-195, 16 refs., With French summary.
Frost, H.J.
Ice physics, Boundary layer, Dislocations (materials), Sliding, Ice crystal structure, Metals, Temperature effects, Stresses.

42-3799
Study of grain boundaries in ice by internal friction measurement.
Tatibouet, J., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.197-203, 16 refs., With French summary.
Perez, J., Vassoille, R.
Ice crystal structure, Internal friction, Ice relaxation, Dislocation (materials), Boundary layer, Ice plasticity, Temperature effects.

42-3800
Fracture of ice Ih.
Schulson, E.M., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.207-220, 22 refs., With French summary.
Ice cracks, Fracturing, Stress strain diagrams, Ice mechanics, Brittleness, Tensile properties, Crack propagation, Compressive properties, Grain size, Models.

42-3801
Inelastic properties of several high pressure crystalline phases of H2O: ices II, III and V.
Durham, W.B., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.221-226, 9 refs., With French summary.
Kirby, S.H., Heard, H.C., Stern, L.A.
High pressure ice, Ice elasticity, Ice crystal structure, Ice deformation, Ice strength, Temperature effects, Ice deformation, Ice mechanics.

42-3802
Inelastic properties of ice I(h) at low temperatures and high pressures.
Kirby, S.H., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p 227-232, 18 refs., With French summary.
Ice elasticity, Ice creep, Ice strength, Ice deformation, Rheology, Ice mechanics, Low temperature tests, Pressure, Shear stress.

42-3803
Viscosity of ice V.
Sotin, C., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.233-238, 10 refs., With French summary.
Poirier, J.P.
Ice mechanics, Viscosity, Ice creep, High pressure ice, Rheology, Temperature effects, Compressive properties.

42-3804
Snow sounds.
Camp, P.R., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.239-241, 3 refs., With French summary.
Snow acoustics, Sound waves, Relaxation (mechanics), Snow temperature, Snow depth, Snow mechanics.

42-3805
Rate controlling processes in the creep of polar glacier ice.
Pimienta, P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.243-248, 26 refs., With French summary.
Duval, P.
Ice creep, Glacier flow, Stresses, Ice deformation, Ice mechanics, Rheology, Viscosity, Antarctica—Amundsen-Scott Station.
Torsion tests have been carried out on artificial ice and on samples cut from an ice core obtained at South Pole Station. Results give a stress exponent smaller than 2 for stresses lower than 0.1 MPa. Analysis of the inclinometer survey of the Dye 3 borehole yields the same result. The deformation mechanisms of polar ice at low stresses are reviewed. A Newtonian viscosity may be expected with dislocation glide accommodated by grain boundary migration linked with grain growth. However, rotation of crystals by dislocation glide and strain-induced boundary migration are complementary and efficient mechanisms to accommodate the incompatible plastic deformation between grains of different lattice orientation. These deformation mechanisms concern a great part of polar ice. (Auth.)

42-3806
Firn densification by grain-boundary sliding: a first model.
Alley, R.B., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.249-256, 21 refs., With French summary.
Firn, Ice density, Sliding, Boundary layer, Ice sintering, Particles, Diffusion.

42-3807
Experimental study of the thermal convection in snow. [Etude experimentale de la convection thermique dans la neige],
Brun, E., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.257-262, 13 refs., In French with English summary.
Touvier, F.
Snow thermal properties, Convection, Snow permeability, Thermal conductivity, Heat flux, Experimentation.

42-3808
Particle rearrangement and dislocation creep in a snow-densification process.
Ebinuma, T., , *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.263-269, 18 refs., With French summary.
Maeno, N.
Snow creep, Snow compression, Dislocations (materials), Snow density, Particles, Snow pressure, Snow depth, Stress strain diagrams.

42-3809
Grain growth in laboratory prepared ice: solute effects.
Achaval, E.M. de, et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.283-288, 12 refs., With French summary.
Nasello, O.B., Ceppi, E.A.
Ice growth, Particles, Ice crystal structure, Doped ice, Temperature effects, Solutions, Experimentation.

42-3810
Approach to similar tertiary creep rates for antarctic core ice and laboratory prepared ice.
Gao, X.Q., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.289-296, 10 refs., With French summary.
Jacka, T.H.
Ice creep, Ice cores, Ice deformation, Rheology, Compressive properties, Anisotropy, Shear strain, Antarctica—Law Dome.
An account is given of ice deformation experiments in uniaxial compression. Samples studied include isotropic and anisotropic ice, laboratory prepared and from a core drilled at the summit of Law Dome, Antarctica. There are unexplained differences in the minimum strain rates attained by isotropic ices from the core and from the laboratory. Minimum strain rates for anisotropic ice are higher than for isotropic ice provided that the anisotropy is compatible with the stress configuration. In tertiary creep a constant strain rate is attained, associated with the development of a small circle girdle crystal orientation fabric, and an equilibrium crystal size. It is proposed that this tertiary creep is steady state. (Auth.)

42-3811
Preliminary study of friction between ice and sled runners.
Itagaki, K., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), MP 2358, Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.297-301, 5 refs., With French summary.
Lemieux, G.E., Huber, N.P.
Ice friction, Sleds, Water films, Ice melting, Temperature effects, Lubricants, Models.
The effects of runner material and surface conditions on the friction between runners and ice were studied by measuring the velocity of a free-sliding sled. Smooth runners showed lower friction at around -1 C than around -10 C as expected, but the friction of rough runners showed little temperature dependence.

42-3812
Study of cracks in polycrystalline ice under uniaxial compression.
Hallam, S.D., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.303-311, 5 refs., With French summary.
Duval, P., Ashby, M.F.
Ice cracks, Ice crystal structure, Compressive properties, Ice loads, Tests, Crack propagation, Stresses, Tensile properties.

42-3813
Micromechanical view of the fracture toughness of ice.
Nixon, W.A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.313-319, 35 refs., With French summary.
Schulson, E.M.
Ice mechanics, Ice cracks, Ice loads, Temperature effects, Grain size, Tests, Models.

42-3814
Intrinsic curve of ice compression. [Courbe intrinsèque de la glace en compression],
Nadreau, J.P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.321-327, 16 refs., In French with English summary.
Michel, B.
Ice strength, Compressive properties, Ice melting, Temperature effects, Tests, Pressure, Ice salinity.

42-3815
Fatigue behavior of freshwater ice.
Nixon, W.A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.329-335, 13 refs., With French summary.
Smith, R.A.
Ice strength, Loads (forces), Ice deformation, Ice cracks, Fatigue (materials), Tests, Crack propagation, Strains, Temperature effects.

42-3816
Comprative study of the tensile and compressive strength of atmospheric ice. [Etude comparative de la résistance à la traction et à la compression de la glace atmosphérique],
Druez, J., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.337-343, 9 refs., In French with English summary.
Cloutier, J., Claveau, L.
Ice strength, Tensile properties, Compressive properties, Traction, Wind tunnels, Temperature effects, Strains.

42-3817
Growth of ice crystals from the vapour phase. Interaction of basal and prism faces through the diffusion process and the surface kinetic process.
Yokoyama, E., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.347-353, 6 refs., With French summary.
Kuroda, T.
Ice crystal growth, Water vapor, Vapor diffusion, Supersaturation, Ice crystal size.

42-3818
Growth mechanism of ice crystals grown in air at a low pressure and their habit change with temperature.
Gonda, T., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.355-359, 15 refs., With French summary.
Sei, T.
Ice crystal growth, Supersaturation, Ice sublimation, Temperature effects, Pressure, Anistropy.

42-3819
Optical characteristics of different types of snow. Light extinction in snow. [Caractérisation optique de différents types de neige. Extinction de la lumière dans la neige],
Sergent, C., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.361-367, 10 refs., In French with English summary.
Chevrand, P., Lafeuille, J., Marbouty, D.
Snow optics, Depth hoar, Ice structure, Light (visible radiation), Infrared radiation, Grain size, Snow impurities.

42-3820
Role of insoluble particulates in the ice crystal formation in a supercooled water cloud.
Andriambeloma, H., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.369-374, 17 refs., With French summary.
Montmory, R., Podzimek, J.
Ice crystal growth, Supercooled clouds, Ice crystal nuclei, Nucleating agents, Cloud seeding, Ice nuclei, Temperature effects.

42-3821
Application of the replica method for SEM-study of the ice crystal instability.
Stoianova, V., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.375-381, 17 refs., With French summary.
Genadiev, N., Nenow, D.
Ice crystal growth, Water vapor, Ice crystal replicas, Ice crystal structure, Diffusion, Supercooled clouds, Scanning electron microscopy.

42-3822
Density and surface structure of ice accretions.
Prodi, F., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.383-388, 11 refs., With French summary.
Levi, L.
Ice accretion, Ice density, Ice structure, Ice surface, Ice growth, Temperature effects, X ray analysis.

42-3823
Influence of the roughness of rime on its growth by collection of supercooled water droplets: application to power line icing. [Influence de la rugosité du givre sur sa croissance par la captation des gouttes d'eau surfondue: application au givrage des cables électriques],
Personne, P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.389-395, 10 refs., In French with English summary.
Duroure, C.
Power line icing, Ice accretion, Surface roughness, Transmission lines.

42-3824
De-icing analyses—the thermal properties of accreted saline ice.
Horjen, I., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.397-403, 6 refs., With French summary.
Ice removal, Thermal conductivity, Ice thermal properties, Analysis (mathematics), Thermal effects, Ice salinity, Heat capacity, Ice temperature, Ice density.

42-3825
Application of common plastic solutions for ice crystal replication.
Takahashi, T., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.405-411, 9 refs., With French summary.
Fukuta, N.
Ice crystal replicas, Plastics, Tests, Solutions, Vapor pressure.

42-3826
Models of the growth of low density rime. [Modelisation de la croissance du givre de faible densité],
Personne, P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.413-419, 11 refs., In French with English summary.
Duroure, C.
Ice growth, Ice density, Ice accretion, Droplets, Supercooling, Snow pellets.

42-3827
Thin accretions grown on an ice substrate: experimental study and numerical simulation.
Nasello, O.B., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.421-426, 7 refs., With French summary.
Ceppi, E.A., Levi, L.
Ice crystal growth, Substrates, Ice crystal structure, Drops (liquids), Temperature effects, Experimentation, Models, Ice crystal nuclei.

42-3828
Recent work on high-density amorphous ice.
Whalley, E., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.429-434, 8 refs., With French summary.
Ice density, Ice crystal structure, High pressure ice, Phase transformations, Temperature effects, Hydrogen bonds.

42-3829
Phase transitions of ice V and VI.
Handa, Y.P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.435-440, 16 refs., With French summary.
Klug, D.D., Whalley, E.
High pressure ice, Ice crystal structure, Phase transformations, Temperature measurement, Hydrogen bonds, Enthalpy.

42-3830
Non equilibrium ice crystallization in aqueous solutions: comparison with theory, case of solutions of polyalcohols with four carbons, ability to form glasses, compounds favoring cubic ice.
Boutron, P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.441-448, 19 refs., With French summary.
Mehl, P.
Ice crystal growth, Solutions, Vitreous ice, Cubic ice, Low temperature tests.

42-3831
Survival of erythrocytes after cooling into liquid nitrogen: relation with glass-forming tendency on cooling and the transition from cubic into hexagonal ice on rewarming.
Mehl, P., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.449-455, 22 refs. With French summary.
Boutron, P.
Cubic ice, Phase transformations, Ice crystal growth, Temperature effects, Vitreous ice.

42-3832
Neutron diffraction studies of ice nucleation in porous silica.
Dore, J.C., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.457-463, 9 refs., With French summary.
Dunn, M., Chieux, P.
Ice nuclei, Porous materials, Neutron diffraction, Ice crystal growth, Heavy water, Temperature effects, Cubic ice.

42-3833
Comments on the ice I(c) structure and I(c) to (Ih) phase transformation mechanism: a neturon scattering investigation of ice precipitates in glassy LiCl.-D2O.
Elarby-Aouizerat, A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.465-470, 5 refs., With French summary.
Ice crystal structure, Phase transformations, Neutron scattering, Temperature effects, Vitreous ice, Ice accretion, Cubic ice.

42-3834
Vitreous state decomposition study in some aqueous polyalcohols solutions.
Vassoille, R., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.471-475, 12 refs., With French summary.
Vitreous ice, Low temperature research, Solutions, Ice crystal growth, Decomposition, Ice nuclei, Cubic ice, Phase transformations.

42-3835
Calorimetric study of ices I(h) doped with alkali hydroxides and other impurities.
Matsuo, T., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.477-483, 12 refs., With French summary.
Suga, H.
Doped ice, Ice thermal properties, Temperature measurement, Impurities, Heat capacity, Phase transformations, High pressure ice.

42-3836
Role of water layer at an ice surface in the kinetic processes of growth of ice crystals—growth of snow crystals and frost heaving.
Kuroda, T., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.487-493, 8 refs., With French summary.
Ice crystal growth, Snow crystal growth, Frost heave, Ice vapor interface, Water temperature, Thermodynamics, Hydrothermal processes, Ice lenses, Ice solid interface.

42-3837
Ellipsometric study of the ice surface structure just below the melting point.
Furukawa, Y., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.495-501, 19 refs., With French summary.
Yamamoto, M., Kuroda, T.
Ice surface, Ice physics, Ice crystal structure, Water films, Temperature effects, Melting points.

42-3838
Origin of the equilibrium liquid-like layer on ice.
Fukuta, N., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.503-509, 21 refs., With French summary.
Ice surface, Water films, Hydrogen bonds, Surface properties, Freezing, Analysis (mathematics), Pressure.

42-3839
Studies of surface properties of ice using nuclear magnetic resonance.
Mizuno, Y., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.511-517, 19 refs., With French summary.
Hanafusa, N.
Ice surface, Surface properties, Nuclear magnetic resonance, Water films, Temperature effects, Self diffusion, Molecular energy level.

42-3840
Structure and evolution of different ice surfaces at low temperature adsorption studies.
Schmitt, B., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.519-525, 19 refs., With French summary.
Ocampo, J., Klinger, J.
Adsorption, Ice surface, Ice structure, Ice mechanics, Water vapor, Low temperature research, Ice crystal structures.

42-3841
Recent experimental work on solute redistribution at the ice/water interface. Implications for electrical properties and interface processes.
Gross, G.W., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.527-533, 23 refs., With French summary.
Gutjahr, A., Caylor, K.
Ice water interface, Ice electrical properties, Solutions, Ions, Distribution, Impurities.

42-3842
Some structural studies of clathrate hydrates.
Davidson, D.W., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.537-542, 11 refs., With French summary.
Clathrates, Hydrates, Ice structure, Pressure, X ray diffraction.

42-3843
Thermal expansion of the clathrate hydrates of ethylene oxide and tetrahydrofuran.
Tse, J.S., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.543-548, 25 refs., With French summary.
Clathrates, Hydrates, Ice thermal properties, Thermal expansion, X ray diffraction, Temperature effects.

42-3844
Microscopic observations of the air hydrate-bubble. Transformation process in glacier ice.
Shoji, H., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.551-556, With French summary. 6 refs.
Langway, C.C., Jr.
Glacier ice, Hydrates, Microstructure, Ice cores, Glacier flow, Bubbles, Transformations, Antarctica—Byrd Station.
Microscopic examinations for air hydrate inclusions were made on specimens of the Dye-3 and Camp Century, Greenland and Byrd Station, Antarctica deep ice cores. The shallowest depths at which air hydrates are observed in the Dye-3, Camp Century and Byrd Station cores are at 1092 m, 1099 m and 727 m depths respectively. For the Dye-3 and Camp Century cores, the observed depths for air hydrate appearance agree with Miller's calculation. For the Byrd Station core, the observed depth for the appearance is about 100 m shallower than the calculated result by Miller. This apparent difference at Byrd Station may be attributed to the general upward ice flow trajectory which begins about 5 km upstream from the Byrd Station location. The phase/grain boundary observations and deformation experiments revealed that phase boundary energy is much higher than grain boundary energy and that the transformation process from air hydrate to bubble is clearly related to the strain-induced nucleation process. These findings suggest that the air hydrate/bubble transformation process is strongly controlled by both *in situ* and post ice core recovery nucleation activation process. (Auth.)

42-3845
Chemical reactivity on the disordered surfaces. The case of ice.
Ocampo, J., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.557-563, 17 refs., With French summary.
Schmitt, B., Klinger, J.
Ice surface, Clathrates, Phase transformations, Temperature effects, Analysis (mathematics).

42-3846
Thermal conductivity of tetrahydrofuran clathrate hydrate.
White, M.A., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.565-572, With French summary. 32 refs.
Clathrates, Hydrates, Thermal conductivity, Ice crystal structure, Melting points, Heat capacity.

42-3847
Phase transitions attributable to disorder in waters of hydration in M(ClO4)(2).6H2O (M=Cd,Mg,Zn).
White, M.A., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.573-578, 26 refs., With French summary.
Falk, M.
Clathrates, Hydrates, Phase transformations, Hydrogen bonds, Temperation measurement, Infrared reconnaissance, Ions, Low temperature research.

42-3848
Amorphous ice. A microporous solid: astrophysical implications.
Mayer, E., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.581-586, 28 refs., With French summary.
Pletzer, R.
Extraterrestrial ice, Microstructure, Ice crystal structure, Water vapor, Ice physics, Ice accretion, Comets.

42-3849
Equilibrium temperature of ice grains formed around a star as a function of stellar parameters.
Crifo, J.F., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.587-592, 10 refs., With French summary.
Extraterrestrial ice, Ice temperature, Particles, Planetary environments.

42-3850
Technique for the growth of high quality single crystals of ice.
Ohtomo, M., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.595-598, 4 refs., With French summary.
Ahmad, S., Whitworth, R.W.
Ice crystal growth, Ice density, Freezing, X ray analysis.

42-3851
Possible ordered structures of ice Ih.
Howe, R., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.599-604, 10 refs., With French summary.
Ice crystal structure, Protons, Molecular structure, High pressure ice.

42-3852
D.C. conductivity of antarctic ice in relation to its chemistry.
Legrand, M., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.605-611, 22 refs., With French summary.
Petit, J.R., Korotkevich, E.S.
Ice composition, Ice electrical properties, Electrical resistivity, Impurities, Meltwater, Chemical analysis, Ice cores, Antarctica—Vostok Station, Antarctica—Amundsen-Scott Station.
Conductivity profiles for antarctic ice cores (Vostok and South Pole stations) were studied in relation with a comprehensive study of soluble species. The profiles revealed an important "double spike" on both conductivity and sulfuric acid record for snow deposited during the "Tambora years (1815)" which is used as a stratigraphic marker. Among the 3 acids (H2SO4, HCl and HNO3) usually present in the ice HCl and HNO3 seem to be more effective than H2SO4 on the conductivity background. In addition a negative effect of aluminosilicates is suggested. These results suggest that impurities are located at grain boundaries where the pH can reach very low values. This assumption is in agreement with the conductivity model previously proposed by Wolff and Paren. (Auth. mod.)

42-3853
Meteorology, chemistry, acidity of mountain snowfalls and snowpack chemistry.
Page, Y., *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.613-617, 4 refs., With French summary.
Meteorological data, Precipitation (meteorology), Mountains, Chemical analysis, Ions, Statistical analysis.

42-3854
Variations of (delta 18)O and Cl(ion) in the ice cores of Spitsbergen.
Punning, IA.-M.K., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.619-624, 11 refs., With French summary.
Valkmiae, R.A., Tõugu, K.
Ice composition, Firn, Isotope analysis, Geochemistry, Climatic factors, Ice cores, Ions, Norway—Spitsbergen.

42-3855
High-resolution neutron powder diffraction study of ice I(c).
Kuhs, W.F., et al, *Journal de physique (Colloque C1)*, Mar. 1987, 48(3 Suppl.), Symposium on the Physics and Chemistry of Ice, 7th, Grenoble, France, Sep. 1-5, 1986. [Proceedings], p.631-636, 36 refs., With French summary.
Bliss, D.V., Finney, J.L.
Cubic ice, Neutron diffraction, Ice crystal structure, High pressure ice, Hydrogen bonds, Phase transformations.

42-3856
Storm-influenced deltas and ice scouring in a late Pleistocene glacial lake.
Eyles, N., et al, *Geological Society of America. Bulletin*, May 1988, 100(5), p.793-809, 70 refs.
Clark, B.M.
Ice scoring, Glacial lakes, Lacustrine deposits.

42-3857
Fox permafrost tunnel: a late Quaternary geologic record in central Alaska.
Hamilton, T.D., et al, *Geological Society of America. Bulletin*, June 1988, 100(6), MP 2355, p.948-969, 70 refs.
Craig, J.L., Sellmann, P.V.
Permafrost, Tunnels, Geologic structures, Quaternary deposits.

42-3858
Dispersive noise removal in t-x space: application to Arctic data.
Beresford-Smith, G., et al, *Geophysics*. Mar. 1988, 53(3), p.346-358, 13 refs.
Rango, R.N.
Seismic prospecting, Floating ice.

42-3859
Radiation characteristics of an arbitrary antenna positioned on a polar ice sheet.
West, J.C., et al, *Geophysics*, Dec. 1987, 52(12), p.1689-1696, 19 refs.
Demarest, K.R.
Radar, Ice sheets, Ice cover thickness, Ice structure, Antennas.

42-3860
Seismic and electrical properties of unconsolidated permafrost.
King, M.S., et al, *Geophysical prospecting*, May 1988, 36(4), p.349-364, 19 refs.
Zimmerman, R.W., Corwin, R.F.
Seismic prospecting, Electromagnetic prospecting, Acoustic measurement, Permafrost physics, Unfrozen water content.

42-3861
Influence of perennially frozen strata on gas distribution in coal deposits of the northeastern USSR. [O vliianii tolshchi mnogoletnemerzlykh porod na raspredelenie gaza na ugol'nykh mestorozhdeniiakh Severo-Vostoka SSSR],
Ushakov, A.A., et al, Evoliutsiia ugleobrazovaniia na Severo-Vostoke Azii (Evolution of coal formation in northeastern Asia) edited by V.G. Varnavskiĭ and L.I. Izmailov, Magadan, 1987, p.169-174, In Russian.
Shagova, N.F.
Mining, Coal, Continuous permafrost, Sporadic permafrost, Natural gas, Distribution.

42-3862
Physics of hail process formation and active modification. Proceedings of an All-Union seminar, Nal'chik, Oct. 15-17, 1985. [Fizika obrazovaniia gradovykh protsessov i aktivnykh vozdeĭstviĭ na nikh. Materialy vsesoiuznogo seminara, Nal'chik, Oct. 15-17, 1985],
Fedchenko, L.M., ed, Moscow, Gidrometeoizdat, 1988, 140p., In Russian. For selected papers see 42-3863 through 42-3867. Refs. passim.
Cloud physics, Hail clouds, Cloud dissipation, Mathematical models.

42-3863
Determining the form and falling velocity of a melting hailstone. [Opredelenie formy i skorosti padeniia obvodnennoĭ gradiny],
Gzirishvili, T.G., et al, Fizika obrazovaniia gradovykh protsessov i aktivnykh vozdeĭstvii na nikh. Materialy vsesoiuznogo seminara, Nal'chik, Oct. 15-17, 1985 (Physics of hail process formation and active modification. Proceedings of an All-Union seminar, Nal'chik, Oct. 15-17, 1985) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1988, p.28-32, In Russian. 3 refs.
Magradze, G.D.
Ice melting, Mathematical models, Hailstones, Falling bodies, Velocity, Ice formation.

42-3864
Ice accretion in a stream of charged water aerosol. [Otlozhenie l'da v potoke zariazhennogo vodnogo aerozoliа],
Okudzhava, A.M., et al, Fizika obrazovaniia gradovykh protsessov i aktivnykh vozdeĭstvii na nikh. Materialy vsesoiuznogo seminara, Nal'chik, Oct. 15-17, 1985 (Physics of hail process formation and active modification. Proceedings of an All-Union seminar, Nal'chik, Oct. 15-17, 1985) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1988, p.38-42, In Russian. 7 refs.
Bliadze, T.G., Saliashvili, T.N.
Models, Drops (liquids), Electric charge, Ice accretion, Aerosols.

42-3865
Basic problems and some preliminary results of a complex experiment with hail. [Osnovnye zadachi i nekotorye predvaritel'nye rezul'taty kompleksnogo gradovogo eksperimenta],
Abshaev, M.T., et al, Fizika obrazovaniia gradovykh protsessov i aktivnykh vozdeĭstvii na nikh. Materialy vsesoiuznogo seminara, Nal'chik, Oct. 15-17, 1985 (Physics of hail process formation and active modification. Proceedings of an All-Union seminar, Nal'chik, Oct. 15-17, 1985) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1988, p.43-62, In Russian. 10 refs.
Aerosols, Hailstones, Ice nuclei, Topographic effects, Models, Forecasting, Formation.

42-3866
Numerical modeling of the distribution of ice-forming aerosol in convective clouds. [Chislennoe modelirovanie rasprostraneniia l'doobrazuiushchego aerozolia v konvektivnykh oblakakh],
Klingo, V.V., et al, Fizika obrazovaniia gradovykh protsessov i aktivnykh vozdeĭstvii na nikh. Materialy vsesoiuznogo seminara, Nal'chik, Oct. 15-17, 1985 (Physics of hail process formation and active modification. Proceedings of an All-Union seminar, Nal'chik, Oct. 15-17, 1985) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1988, p.86-90, In Russian. 5 refs.
Kudashkin, G.D., Faĭzullin, B.Sh.
Mathematical models, Turbulent diffusion, Cloud seeding, Weather modification, Aerosols, Distribution.

42-3867
Measuring the real values of ice-forming activity of reagents. [Ob izmerenii real'noĭ l'doobrazuiushcheĭ aktivnosti reagentov],
Kondratenko, V.A., Fizika obrazovaniia gradovykh protsessov i aktivnykh vozdeĭstvii na nikh. Materialy vsesoiuznogo seminara, Nal'chik, Oct. 15-17, 1985 (Physics of hail process formation and active modification. Proceedings of an All-Union seminar, Nal'chik, Oct. 15-17, 1985) edited by L.M. Fedchenko, Moscow, Gidrometeoizdat, 1988, p.95-99, In Russian. 4 refs.
Supercooled fog, Fog dispersal, Aerosols, Cloud dissipation.

42-3868
Continuum model for proton transfer in ice containing symmetrical hydrogen bonds.
Kriachko, E.S., *Journal of structural chemistry*, Sep.-Oct. 1987(Pub. Mar. 1988), 28(5), p.704-709, Translated from Zhurnal strukturnoĭ khimii. 29 refs.
Mathematical models, Molecular structure, Ice physics, Proton transport, Hydrogen bonds.

42-3869
Improving the drilling and testing of wells under complicated conditions. [Sovershenstvovanie bureniia i ispytaniia skvazhin v oslozhnennykh usloviiakh],
Timokhin, I.M., ed, Moscow, VNIGNI, 1986, 232p., In Russian. For selected papers see 42-3870 and 42-3871. Refs. passim.
Shmarev, A.T., ed.
Design, Drilling, Ice physics, Plates, Foundations, Frozen ground, Ice crossings, Petroleum industry, Ice cover thickness, Seasonal freeze thaw, Ice roads, Snow roads.

42-3870
Modeling the stress-strain state of a floating ice plate under momentary load. [Modelirovanie napriazhenno-deformirovannogo sostoianiia plavaiushcheĭ ledianoĭ plity pri kratkovremennom zagruzheniĭ],
Tsedershtrem, S.A., Sovershenstvovanie bureniia i ispytaniia skvazhin v oslozhnennykh usloviiakh (Improving the drilling and testing of wells under complicated conditions) edited by I.M. Timokhin and A.T. Shmarev, Moscow, VNIGNI, 1986, p.202-206, In Russian. 4 refs.
Ice roads, Ice crossings, Bearing strength, Snow roads, Design, Ice physics, Petroleum industry, Ice cover thickness.

42-3871
Applicability of mathematical models of the stress-strain state of ground beneath drilling rigs. [Analiz primenimosti raschetnykh modeleĭ napriazhenno-deformirovannogo sostoianiia gruntov pod burovymi ustanovkami],
Nekrasov, A.A., Sovershenstvovanie bureniia i ispytaniia skvazhin v oslozhnennykh usloviiakh (Improving the drilling and testing of wells under complicated conditions) edited by I.M. Timokhin and A.T. Shmarev, Moscow, VNIGNI, 1986, p.207-212, In Russian. 4 refs.
Foundations, Drilling, Plates, Frozen ground, Seasonal freeze thaw, Design.

42-3872
Tribotechnical materials and systems for cold climate. [Tribotekhnicheskie materialy i sistemy dlia kholodnogo klimata],
Filatov, I.S., ed, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1987, 106p., In Russian. For selected papers see 42-3873 through 42-3875. Refs. passim.
Polymers, Plastics ice friction, Ice adhesion, Metals, Corrosion, Metal ice friction, Metal snow friction, Pipes (tubes), Cold weather performance, Construction materials.

42-3873
Ice adhesion to polymer coating at different conditions of moisture crystallization. [Adgeziia l'da k polimernomu pokrytiiu pri razlichnykh usloviiakh kristallizatsii vlagi],
Igoshin, V.A., et al, Tribotekhnicheskie materialy i sistemy dlia kholodnogo klimata (Tribotechnical materials and systems for cold climate) edited by I.S. Filatov, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1987, p.67-71, In Russian. 8 refs.
IAkovlev, S.N.
Coatings, Corrosion, Polymers, Metal ice friction, Ice adhesion, Metal snow friction, Snow cover, Metals.

42-3874
Influence of polymer coating thickness and its heat conductivity on the frictional characteristics of materials in contact with ice. [Vliianie tolshchiny polimernogo pokrytiia i udel'noĭ teploprovodnosti na friktsionnye kharakteristiki materialov v kontakte so l'dom],
Berdnikov, A.G., Tribotekhnicheskie materialy i sistemy dlia kholodnogo klimata (Tribotechnical materials and systems for cold climate) edited by I.S. Filatov, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1987, p.71-76, In Russian. 11 refs.
Polymers, Metal ice friction, Ice adhesion, Construction materials.

42-3875
Influence of an intermediate layer on the fatigue life of bi-plastic pipes in cold climates. [Vliianie promezhutochnogo sloia na rabotosposobnost' biplastmassovykh trub v usloviiakh kholodnogo klimata],
Davydova, N.N., et al, Tribotekhnicheskie materialy i sistemy dlia kholodnogo klimata (Tribotechnical materials and systems for cold climate) edited by I.S. Filatov, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1987, p.76-85, In Russian. 5 refs.
Ignat'ev, V.E., Riabets, IU.S.
Polymers, Plastics ice friction, Pipes (tubes), Design, Construction materials, Cold weather performance.

42-3876
Bending failure of brittle plates and beams on an elastic foundation.
Aguiar, J.B. de, Cambridge, Massachusetts Institute of Technology, Oct. 1987, 297p., Ph.D. thesis. Refs. passim.
Ice loads, Offshore structures, Foundations, Deformation, Elastic properties, Plates, Cracking (fracturing), Analysis (mathematics).

42-3877
Economic analysis of urban planning solutions for construction workers' settlements. [Ekonomicheskiĭ analiz planirovochnykh reshenii bytovykh gorodkov stroiteleĭ],
Novak, B.V., et al, Ekonomika i organizatsiia stroitel'stva v raĭonakh Vostochnoĭ Sibiri i Kraĭnego Severa (Economics and organization of construction in East Siberia and the Far North) edited by E.I. Peryshkin, Krasnoyarsk, Krasnoyarskiĭ Promstroĭniiproekt, 1983, p.30-40, In Russian.
Pal'tsevich, L.P.
Urban planning, Residential buildings, Design, Cost analysis, Permafrost beneath structures, Subarctic landscapes.

42-3878
Geographic and engineering-geological conditions in the Altai steppes. [Geograficheskie i inzhenerno-geologicheskie usloviia Stepnogo Altaia],
Gadzhiev, I.M., ed, Novosibirsk, Nauka, 1988, 97p., In Russian with English table of contents enclosed. Refs. p.95-96.
Steppes, Engineering geology, Cryogenic structures, Permafrost distribution, Foundations, Seasonal freeze thaw, Frost penetration, Permafrost beneath structures, Frost heave, Mountains, Hydrology, Active layer, Alpine landscapes, Loess, Construction, Cryogenic soils, USSR—Ob' River.

42-3879
Morphology and origin of altiplanation terraces under cryozone conditions. [Morfologiia i genezis nagornykh terras v usloviiakh kriozony],
Chalko, A.V., Novosibirsk, 1988, 83p., In Russian with abridged English table of contents enclosed. Refs. p.75-82.
Geologic structures, Geocryology, Altiplanation, Geomorphology, Mountains, Slope processes, Frost weathering, Rock streams, Nivation, Terraces.

42-3880
Methods for measurement of thermal conductivity and specific heat at moderate, low and cryogenic temperatures.
Platunov, E.S., *Journal of engineering physics*, Dec. 1987 (Pub. June 1988), 53(6), p.1452-1457, 11 refs. Translated from Inzhenerno-fizicheskiĭ zhurnal.
Construction materials, Thermal properties, Measuring instruments.

42-3881
Method for the approximate solution of a two-phase Stefan problem with reverse motion of the front.
Medvedskiĭ, R.I., *Journal of engineering physics*, Sep. 1987 (Pub. Mar. 1988), 53(3), p.1079-1085, 10 refs. Translated from Inzhenerno-fizicheskiĭ zhurnal.
Frozen rock temperature, Wells, Frost penetration, Phase transformations, Stefan problem, Mathematical models.

42-3882
Temperature regime to grow modelled ice in the AANII ice model basin.
Dedushkin, R.A., New York, [1988], 3p., ECTC Transl. No. T-856-16, Unpublished manuscript. 1 ref. For Russian original see 42-2062.
Artificial ice, Ice strength, Water chemistry, Ice models, Salinity, Temperature effects.

42-3883
Cracking resistance of ice cover and its breaking by icebreakers.
Gol'dshteĭn, R.V., et al, New York, [1988], 22p., ECTC Transl. No.T-856-20, Unpublished manuscript. 27 refs. For Russian original see 42-2066.
Osipenko, N.M.
Icebreakers, Ice breaking, Ice cracks, Ice strength, Crack propagation, Models, Sea ice distribution.

42-3884
Prevention of ice sticking to ship hulls.
Gavrilo, V.P., et al, New York, [1988], 5p., ECTC Transl. No.T-856-22, Unpublished manuscript. 3 refs. For Russian original see 42-2068.
Nikitin, V.A., IUnak, A.B.
Ship icing, Ice navigation, Ice prevention, Countermeasures, Artificial ice, Water chemistry, Salinity, Tests, Models.

42-3885
Arctic air pollution.
Stonehouse, B., ed, Cambridge, University Press, 1986, 328p., Refs. passim.
Air pollution, Aerosols, Haze, Polar regions, Atmospheric circulation, Chemical analysis, Seasonal variations, Climatic factors, Environmental impact, Origin, Ecology.

42-3886
Past and present chemistry of north and south polar snow.
Delmas, R.J., Arctic air pollution. Edited by B. Stonehouse, Cambridge, University Press, 1986, p.175-186, 16 refs.
Snow composition, Aerosols, Air pollution, Chemical analysis, Climatic changes, Ice cores, Snow air interface, Polar regions, Fallout.
Chemical analysis of snow layers in Antarctica and Greenland has provided valuable information on present and past background aerosol composition, despite probable surface effects at the air-snow interface. Pre-industrial polar precipitation is chemically similar in central areas of the two ice sheets, with a weak primary aerosol component relatively free of the gas-derived acids (mainly H_2SO_4 and HNO_3) characteristic of later deposits. Large volcanic eruptions have contaminated polar snows, particularly by H_2SO_4 fall-out. Records of major volcanic events of the last 200 years are dissimilar in the two

ice sheets: only the 1815 eruption of Tambora appears to be strongly and equally recorded. Anthropogenic pollution has not yet affected south polar regions: the case of heavy metals is very difficult to assess due to their extremely low concentrations in snow. Much more particulate matter reached polar regions during the last glacial age than at present; however, currently available glacio-biochemical data indicate that the effect was different both qualitatively and quantitatively for Greenland and Antarctica. (Auth.)

42-3887
Time-dependent model of a coastal polynya.
Ou, H.W., *Journal of physical oceanography,* Apr. 1988, 18(4), p.584-590, 11 refs.
Polynyas, Ice edge, Wind velocity, Ice accretion, Models.

42-3888
Global sea level and earth rotation.
Peltier, W.R., *Science,* May 13, 1988, 240(4854), p.895-901, 24 refs.
Sea level, Glacier melting, Ice sheets, Earth rotation.
Recent analyses of long time scale secular variations of sea level, based on tide gauge observations, have established that sea level is apparently rising at a globally averaged rate somewhat in excess of 1 mm/year. It has been suggested that the nonsteric component of this secular rate might be explicable in terms of ongoing mass loss from the small ice sheets and glaciers of the world. Satellite laser ranging and very long baseline interferometry data may be used to deliver strong constraints on this important scenario because of the information that these systems provide on variations of the length of day and of the position of the rotation pole with respect to the earth's surface geography. These data demonstrate that the hypothesis of mass loss is plausible if the Barents Sea was covered by a substantial ice sheet at the last maximum of the current ice age 18,000 years ago. Data on subantarctic glaciers and ice sheets are included in this study. (Auth.)

42-3889
Growth rhythms and ways of structural adaptation of tundra plants. [Ritmy rosta i puti strukturnoĭ adaptatsii tundrovykh rasteniĭ],
Shilova, N.V., Leningrad, Nauka, 1988, 212p., In Russian with abridged English table of contents enclosed. Refs. p.200-210.
Tundra, Vegetation, Introduced plants, Acclimatization, Plant ecology, Human factors, Soil erosion.

42-3890
Tien Shan as seen by a glaciologist. [Tian'-Shan' glazami gliatsiologa],
Serebrianniĭ, L.R., et al, Moscow, Nauka, 1988, 143p., In Russian with English table of contents enclosed. 36 refs.
Orlov, A.V.
Alpine landscapes, Mountain glaciers, Glacier ice, Snow cover distribution, Glacial erosion, Glacial deposits, Slope processes, Geocryology, Snow water equivalent, Surveys, Expeditions.

42-3891
Plankton bacteria of the Yenisey River. [Bakterioplankton reki Enisei],
Driukker, V.V., et al, Novosibirsk, Nauka, 1988, 96p., In Russian with abridged English table of contents enclosed. Refs. p.92-95.
Petrova, V.I.
Permafrost beneath rivers, Flow control, Rivers, Bacteria, Plankton, Surveys, Polar regions, Expeditions, USSR—Yenisey River.

42-3892
Studies of gas content in the hydrate-formation zones of the USSR. [Izuchenie gazonosnosti zon gidratoobrazovaniia SSSR],
Cherskiĭ, N.V., et al, Yakutsk, IAkutskiĭ filial SO AN SSSR, 1987, 175p., In Russian with abridged English table of contents enclosed. 189 refs.
Nikitin, S.P.
Natural gas, Hydrates, Clathrates, Permafrost.

42-3893
Highway design. [Proektirovanie avtomobil'nykh dorog],
Babkov, V.F., et al, Moscow, Transport, 1987, 417p. (Pertinent p.228-247), In Russian. 24 refs.
Andreev, O.V.
Permafrost beneath roads, Active layer, Roadbeds, Design, Foundations, Clay soils, Freeze thaw cycles, Frost heave, Embankments, Permafrost structure, Swamps, Maps, Permafrost distribution.

42-3894
Studies of McMurdo Sound fast ice.
Crocker, G.B., *New Zealand antarctic record,* 1988, 8(2), p.20-25, 8 refs.
Sea ice, Wave propagation, Wind velocity, Strain tests.
The general purpose of these studies was to gain understanding of the growth and destruction of the fast ice in McMurdo Sound. Three models were used and all seriously underpredicted ice growth because they were unable to account for the oceanic heat component. McMurdo Sound is unusual in having large positive heat fluxes in summer and significant negative fluxes in winter. When the models were adjusted to deal with these unusual features, good agreement with the models was obtained. Two major elements in the destruction of the sea ice are wind and wave action. A threshold wind velocity was found, below which wave energy does not propagate in the ice cover. This value is roughly 10 m/s. This knowledge resulted from analyses of data from two sets of instrumentation located about 1,500 m offshore of Scott Base. One of these measured air temperature, humidity and wind velocity. An in-ice thermistor chain was part of this set. The second was a rosette of strain gauges bolted to the ice at 120 deg to each other. Recordings of this strain net were made routinely an hour each day all winter. The mic-met set operated 10 runs during the winter, each run lasting 4 to 5 days during which all 16 data channels were sampled at 10 minute intervals.

42-3895
Organizing construction in northern West Siberia on the basis of engineering geocryology. [Organizatsiia stroitel'stva na severe Zapadnoĭ Sibiri: inzhenerno-geokriologicheskie osnovy],
Novikov, I.P., *Stroitel'stvo truboprovodov,* June 1988, No.6, p.7-9, In Russian.
Pipelines, Engineering geology, Design, Geocryology, Site surveys, Mapping, Transportation, Ice roads, Snow roads, Subpolar regions, Petroleum industry, Ice (construction material), USSR—Tyumen'.

42-3896
Construction worker in the North. Sociological studies of manpower potential. [Stroitel' na Severe. Trudovoĭ potentsial v zerkale sotsiologicheskikh issledovaniĭ],
Ponomarenko, I.T., et al, *Stroitel'stvo truboprovodov,* June 1988, No.6, p.10-13, In Russian.
Lastovskiĭ, G.L.
Construction, Work time standards, Polar regions.

42-3897
Rotary trencher. [Rotornyĭ transheĭnyĭ ekskavator],
Kovalev, E.P., et al, *Stroitel'stvo truboprovodov,* June 1988, No.6, p.25-26, In Russian.
Al'shits, M.Z.
Pipelines, Earthwork, Permafrost beneath structures, Design, Frozen ground.

42-3898
Channel processes and morphology of mountain riverbeds subject to frequent mudflows (the case of the northern slope of Zailiyskiy Alatau). [Ruslovye protsessy i morfologii rusel gornykh rek v usloviiakh aktivnoĭ selevoĭ deiatel'nosti (na primere rek severnogo sklona Zailiĭskogo Alatau)],
Kuznetsov, K.L., et al, *Geomorfologiia,* Apr.-June 1988, No.2, p.71-78, In Russian with English summary. 15 refs.
Chalov, R.S.
Rivers, Mudflows, Slope processes, Sediment transport, Stream flow, Mountains.

42-3899
Estimating the harmful effect of sign-variable temperature cycles on heavy concrete. [Otsenka povrezhdaiushchego deĭstviia znakoperemennykh temperaturnykh tsiklov na tiazhelyĭ beton],
Aktuganov, I.Z., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo arkhitektura,* 1988, No.4, p.47-50, In Russian. 2 refs.
Pushkin, A.A.
Winter concreting, Concrete freezing, Frost resistance, Freeze thaw cycles, Concrete strength.

42-3900
Development of rural power-supply networks in the North, Siberia and the Far East. [Osobennosti razvitiia sel'skikh elektroseteĭ v raĭonakh Severa, Sibiri i Dal'nego Vostoka],
Korataev, E.I., et al, *Energeticheskoe stroitel'stvo,* May 1988, No.5, p.27-28, In Russian. 10 refs.
Marfin, N.I., Pleshkov, V.A.
Power line supports, Electric power, Foundations, Permafrost beneath structures, Cost analysis.

42-3901
Ground-sounding instruments mounted on the USZ-15/36 all-terrain vehicle. [Staticheskoe zondirovanie gruntov s pomoshch'iu ustanovki USZ-15/36],
Pylaev, E.L., et al, *Energeticheskoe stroitel'stvo,* May 1988, No.5, p.40-42, In Russian.
Ziuzin, A.I., Kornilenko, A.I., Forshtreter, E.L.
All terrain vehicles, Engineering geology, Frozen ground, Sounding, Surveys, Soil physics.

42-3902
Present state of frozen dams in the Magadan region. [Sovremennoe sostoianie merzlykh plotin v Magadanskoĭ oblasti],
Biianov, G.F., et al, *Energeticheskoe stroitel'stvo,* June 1988, No.6, p.27-34, In Russian. 5 refs.
Kuznetsov, G.I.
Earth dams, Permafrost control, Artificial freezing, Permafrost beneath structures, Thermokarst, Permafrost thermal properties, Rock fills, Earth fills, Hydraulic structures, Deformation.

42-3903
Transport schemes for rural construction of electric nets in northern regions. [Transportnye skhemy dlia sel'skogo elektrosetevogo stroitel'stva v severnykh raĭonakh],
Marfin, N.I., *Energeticheskoe stroitel'stvo,* June 1988, No.6, p.34-37, In Russian. 11 refs.
Railroads, Electric power, Permafrost beneath structures, Power lines, Transportation, Power line supports, Construction materials, Construction equipment, Cost analysis.

42-3904
Present state and problems of providing geocryological information to railroad construction. [Sostoianie i zadachi geokriologicheskogo obespecheniia stroitel'stva],
Kondrat'ev, V.G., et al, *Transportnoe stroitel'stvo,* June 1988, No.6, p.9-11, In Russian. 14 refs.
Korolev, A.A.
Route surveys, Permafrost distribution, Aerial surveys, Railroads, Permafrost forecasting, Permafrost control, Permafrost beneath structures.

42-3905
Studying the experience of using chemical admixtures in concrete. [Izuchenie opyta primeneniia khimicheskikh dobavok v beton],
Zhukov, A.F., *Transportnoe stroitel'stvo,* June 1988, No.6, p.32-37, In Russian.
Air entrainment, Concrete admixtures, Antifreezes, Winter concreting, Concrete strength, Frost resistance, Chemical composition.

42-3906
Peculiarities of testing industrial pipelines in the Far North. [Osobennosti ispytaniĭ promyslovykh truboprovodov na kraĭnem Severe],
Borisov, I.V., *Stroitel'stvo truboprovodov,* May 1988, No.5, p.26-27, In Russian.
Pipelines, Permafrost beneath structures, Pipeline freezing, Tests.

42-3907
Improving the technology and organization of pipeline construction in YAmburg. [Sovershenstvovat' tekhnologiiu i organizatsiiu stroitel'stva promyslovykh truboprovodov na IAmburge],
Gabelaia, R.D., *Stroitel'stvo truboprovodov,* May 1988, No.5, p.27-28, In Russian.
Pipe laying, Permafrost beneath structures, Cold weather construction, Thermal insulation, Pipeline freezing, Welding.

42-3908
Mobile assembly for flame-jet drilling of frozen ground. [Mobil'naia ustanovka dlia ognestruĭnogo bureniia merzlykh gruntov],
Shapovalov, I.A., et al, *Stroitel'stvo truboprovodov,* May 1988, No.5, p.41-43, In Russian.
Drilling, Thermal drills, Frozen ground.

42-3909
Construction of the nuclear-powered icebreaking cargo-barge-container carrier *Sevmorput'*. [Na stroitel'stve atomnogo ledokol'no-transportnogo likhterovoza-kontseinerovoza "Sevmorput'"],
Voloshin, A.A., *Sudostroenie,* June 1988, No.6, p.17-18, In Russian.
Ice navigation, Ships, Icebreakers.

42-3910
Improving hull gear of ice-going ships. [Sovershenstvovanie ustroĭstv sudov ledovogo plavaniia],
Makeev, A.N., et al, *Sudostroenie,* June 1988, No.6, p.29-30, In Russian.
Kuperman, A.M.
Ice navigation, Ships, Icebreakers.

42-3911
Freezing of soil with an unfrozen water content and variable thermal properties.
Lunardini, V.J., *U.S. Army Cold Regions Research and Engineering Laboratory,* Mar. 1988, CR 88-02, 23p., ADA-195 343, 15 refs.
Soil freezing, Unfrozen water content, Thermal conductivity, Phase transformations, Temperature effects, Specific heat.

While many materials undergo phase change at a fixed temperature, soil systems exhibit a definite zone of phase change. The variation of unfrozen water with temperature causes a soil system to freeze or thaw over a finite temperature range. Exact and approximate solutions are given for conduction phase change of plane layers of soil with unfrozen water contents that vary linearly and quadratically with temperature. The temperature and phase change depths were found to vary significantly from those predicted for the constant-temperature or Neumann problem. The thermal conductivity and specific heat of the soil within the mushy zone varied as a function of unfrozen water content. It was found that the effect of specific heat is negligible, while the effect of variable thermal conductivity can be accounted for by a proper choice of thermal properties used in the constant-thermal-property solution.

42-3912
Spatial and seasonal variations in primary production of sea ice microalgae and phytoplankton in Frobisher Bay, Arctic Canada.
Hsiao, S.I.C., *Marine ecology. Progress series,* May 26, 1988, 44(3), p.275-285, 44 refs.
Biomass, Algae, Cryobiology, Sea ice, Canada—Northwest Territories—Frobisher Bay.

42-3913
Phenomena at the advancing ice-liquid interface: solutes, particles, and biological cells.
Körber, C., *Quarterly reviews of biophysics,* May 1988, 21(2), p.229-298. Refs. p.287-298.
Ice edge, Ice water interface, Solutions, Freezing, Cryobiology.

42-3914
Developments in Arctic long-wave propagation theory and experiments.
Kelly, F.J., et al, *Radio science,* May-June 1988, 23(3), p.240-246, 17 refs.
Radio waves, Ice structure, Attenuation, Ice sheets.

42-3915
Damage to ship plating due to ice impact loads.
Wiernicki, C.J., *Marine technology,* Jan. 1987, 24(1), p.43-58, Paper presented at meeting of Society of Naval Architects and Marine Engineers, Chesapeake Section, Dec. 19, 1985. 13 refs.
Ships, Impact strength, Ice pressure, Loads (forces), Damage.

42-3916
Frost hardiness and carbohydrates changes in leaves of *Nothofagus dombeyi* (mirb.) Oerst at various ontogenetic stages.
Rios, D., et al, *Acta oecologica; oecologia plantarum,* 1988, 9(2), p.135-144, With French summary. 33 refs.
Plant physiology, Frost resistance.

42-3917
Transport of indicator clasts by ice sheets and the transport half-distance: a contribution to prospecting for ore deposits.
Strobel, M.L., et al, *Journal of geology,* Sep. 1987, 95(5), p.687-697, 32 refs.
Faure, G.
Ice sheets, Periglacial processes, Glacial deposits.

42-3918
Environmental limits of needle ice: a global survey.
Lawler, D.M., *Arctic and alpine research,* May 1988, 20(2), p.137-159, Refs. p.156-159.
Ice needles, Bibliographies, Data processing.

42-3919
Rock glacier appearance level and rock glacier initiation line altitude: a methodological approach to the study of rock glaciers.
Humlum, O., *Arctic and alpine research,* May 1988, 20(2), p.160-178, Refs. p.176-178.
Rock glaciers, Periglacial processes.

42-3920
Glacier inventory for the Northern Patagonia Icefield, Chile, and variations 1944/45 to 1985/86.
Aniya, M., *Arctic and alpine research,* May 1988, 20(2), p.179-187.
Glacier surveys, Chile—Patagonia.

42-3921
Solar resetting of thermoluminescence of sediments in a glacier-dominated fiord environment in Spitsbergen: geochronologic implications.
Forman, S.L., *Arctic and alpine research,* May 1988, 20(2), p.243-253, 30 refs.
Glacial deposits, Luminescence, Sediments.

42-3922
Coarse particle soil dust in Arctic aerosols, Spring 1983.
Winchester, J.W., et al, *Geophysical research letters,* Oct. 1984, 11(10), p.995-998, 19 refs.
Aerosols, Particle size distribution.

42-3923
White lightning in the mountains. [Belye molnii gor],
Kanaev, L.A., Leningrad, Gidrometeoizdat, 1987, 151p., In Russian with abridged English table of contents enclosed.
Avalanches, Snow cover distribution, Snow depth, Expeditions, Glaciology, Photography.

42-3924
Materials for studying the history and present state of glaciers on the Kronotskiy volcano. [Materialy k izucheniiu istorii i sostoianiia lednikov na Kronotskom vulkane],
Tsiurupa, A.I., *Geograficheskoe obshchestvo SSSR. Izvestiia,* May-June 1988, 120(3), p.269-274, In Russian. 11 refs.
Volcanoes, Glaciation, Mountain glaciers, Glacier ice, Snow cover distribution, Snow depth, Glacial lakes.

42-3925
Using millimeter spectroscopy in studying water in disperse solid state. [Izuchenie sostoianiia vody v dispersnoĭ tverdoĭ faze metodom millimetrovoĭ spektroskopii],
Khurgin, IU.I., et al, *Akademiia nauk SSSR. Doklady,* 1988, 299(4), p.929-931, In Russian. 5 refs.
Hygroscopic water, Ice, Dispersions, Spectroscopy.

42-3926
Millimeter-wave propagation measurements at the Ballistic Research Laboratory.
Wallace, H.B., *IEEE transactions on geoscience and remote sensing,* May 1988, 26(3), p.253-258, 11 refs.
Radio waves, Snowfall, Fog, Attenuation, Reflection.

42-3927
Influence of surrounding permafrost temperature on the stressed state around mine workings.
Kovlekov, I.I., *Soviet mining science,* May-June 1987 (Pub. Mar. 1988), 23(3), p.199-202, Translated from Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh, No.3, p.20-24, 1987. 7 refs.
Permafrost thermal properties, Frozen rock temperature, Stresses, Placer mining, Air temperature, Heat transfer, Analysis (mathematics).

42-3928
Penetration of an axisymmetric conical hammer into frozen soil.
Koshelev, E.A., *Soviet mining science,* May-June 1987 (Pub. Mar. 1988), 23(3), p.227-232, Translated from Fiziko-tekhnicheskie problemy razrabotki poleznykh iskopaemykh, No.3, p.20-24, 1987. 7 refs.
Frozen ground strength, Penetration tests, Hammers, Hardness tests.

42-3929
Seasonal and temporal changes of organic compounds in rain and snow.
Czuczwa, J., et al, *Atmospheric environment,* 1988, 22(5), p.907-916, 25 refs.
Leuenberger, C., Giger, W.
Precipitation (meteorology), Chemical composition, Snow composition, Switzerland.

42-3930
Thermal simulation of a lake with winter ice cover.
Patterson, J.C., et al, *Limnology and oceanography,* May 1988, 33(3), p.323-338, 32 refs.
Hamblin, P.F.
Lake ice, Thermodynamics, Models, Temperature distribution.

42-3931
Antarctica (Key environments series).
Bonner, W.N., ed, Oxford, Pergamon Press, 1985, 381p., Refs. passim. For individual papers see 42-3932 through 42-3936 or A-37938, B-37920, B-37924 through B-37937, E-37922, E-37923 and I-37921.
Walton, D.W.H., ed.
Ice edge, Ice cover, Soil formation, Ecology.
This volume, published in collaboration with the International Union for Conservation of Nature and Natural Resources, is a collection of papers on antarctic exploration in biology, physical geography, terrestrial and marine habitats, birds and mammals, and food webs and interactions. The papers are from experts aiming to contribute to the knowledge of their particular environments, to identify recent environmental changes and to suggest effective management and conservation strategies for the future.

42-3932
Physical geography—climate.
Phillpot, H.R., Antarctica. Edited by W.N. Bonner and D.W.H. Walton (Key environments series), Oxford, Pergamon Press, 1985, p.23-38, Refs. p.37-38.
Climate, Sea ice, Ice edge, Mass balance, Ice cover.
The three dominant features influencing antarctic climate—the waters of the southern ocean, the variable sea ice cover, and the continental ice sheet—are examined, with maps showing location of meteorological stations, surface circulation of oceans south of 30S, mean maximum ice extent in Feb. and Mar., total cloudiness percent over Antarctica in Jan. and July, mean monthly isotherms in Jan. and July, average strength of surface temperature inversion over Antarctica in winter, average wind speed in Jan. and July, annual snow balance, and a table showing the generalized time scale of climatic events for high latitudes in the Southern Hemisphere. It is concluded that at present the antarctic ice sheet appears to be stable, but that it is very important to keep an eye on the climate.

42-3933
Physical geography—geological evolution.
Elliot, D.H., Antarctica. Edited by W.N. Bonner and D.W.H. Walton (Key environments series), Oxford, Pergamon Press, 1985, p.39-61, 41 refs.
Paleoclimatology, Ice cover thickness, Ice formation, Tectonics.
A review is presented of studies on Antarctica and plate tectonics, Antarctica in Gondwana and the Gondwana break-up, the paleoclimate and the formation of continental ice. An evaluation of potential resources, based on the geological features reviewed, includes a suggestion that at present it is not known what the metallic, non-metallic and hydrocarbon resources in the Antarctic might be.

42-3934
Physical geology—soils.
Claridge, G.G.C., et al, Antarctica. Edited by W.N. Bonner and D.W.H. Walton (Key environments series), Oxford, Pergamon Press, 1985, p.62-70, 14 refs.
Campbell, I.B.
Polar regions, Soil formation, Soil chemistry, Permafrost.
Ice-free areas occupy some 2% of the antarctic continent and occur in the Antarctic Peninsula, along the Transantarctic Mountains, and in other scattered coastal situations, where ice sheets have retreated or where glaciers have diminished in volume and disappeared from valleys. In these, mostly moraine-covered bare ground, weathering and soil formation on the exposed rocks and glacial deposits has commenced. These soil-forming factors, and soil zones, are described. The significance of soil studies, from the points of interest of history of Antarctica, the nature and significance of salts, the relationship with soils of the hot deserts, and the influence of man on soils are discussed. It is concluded that care needs to be taken to ensure that soils are not altered, and that they are protected from local activities including physical disturbance, accumulation of atmospheric and other pollutants, and the accidental introduction of new soil organisms.

42-3935
Plankton of the antarctic seas.
El-Sayed, S.Z., Antarctica. Edited by W.N. Bonner and D.W.H. Walton (Key environments series), Oxford, Pergamon Press, 1985, p.135-153, 19 refs.
Ice cover effect, Marine biology.
Physical and chemical characteristics of the antarctic ecosystem, the phytoplankton and zooplankton composition, distribution, seasonal variations and interrelationships, are described. Particular emphasis is put on krill, the organism and its biology and stocks, in the light of krill's importance in the antarctic food chain and in commercial exploitation.

42-3936
Marine habitats—benthos.
Picken, G.B., Antarctica. Edited by W.N. Bonner and D.W.H. Walton (Key environments series), Oxford, Pergamon Press, 1985, p.154-172, Refs. p.171-172.
Ice cover effect, Biomass, Sea ice distribution, Ecology.
The boundaries of the benthic region within which the fauna is considered antarctic are defined, with a description of the environment, including a review of benthic flora & fauna communities in the littoral and the sub-littoral region, the biogeography and origin of benthic fauna and the physiology of benthic invertebrates. It is found that conditions in the antarctic benthos are unique, with a deep shelf and abyssal plain littered with hard substrates, a constantly low temperature, and an input of primary productivity which is large, short-lived and generally regular each year. The benthic fauna is well adapted to its environment, and available energy is utilized very efficiently.

42-3937
Heat transfer in a wet porous thermal insulation in a flat roof.
Hedlin, C.P., *Journal of thermal insulation,* Jan. 1988, 11(3), p.165-188, 9 refs.
Roofs, Thermal insulation, Heat transfer.

42-3938
On the micrometeorology of surface hoar growth on snow in mountainous area.
Colbeck, S.C., *Boundary-layer meteorology,* July 1988, 44(1-2), MP 2359, p.1-12, 16 refs.
Hoarfrost, Snow surface, Snow air interface, Turbulence.

42-3939
Short-range radio navigation systems: current status and prospects.
Pakholkov, G.A., et al, *IEEE aerospace and electronic systems magazine*, Jan. 1988, 3(1), p.2-7, Paper presented at AUSRIRE/RTCA Symposium, May 25-31, 1987, Leningrad, USSR. 4 refs.
Gromov, G.N.
Ice navigation, Icebreakers.

42-3940
Millimeter-wave multipath measurements on snow cover.
Lammers, U.H.W., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.259-267, 9 refs.
Hayes, D.T., Marr, R.A.
Snow surface, Radio waves, Reflection.

42-3941
Fluctuation statistics of millimeter-wave scattering from distributed targets.
Ulaby, F.T., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.268-281, 25 refs.
Haddock, T.F., Austin, R.T.
Radio waves, Scattering, Snow surface.

42-3942
Millimeter-wave backscatter measurements on snow-covered terrain.
Baars, E.P., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.282-299, 10 refs.
Essen, H.
Snow surface, Radio waves, Backscattering.

42-3943
Surface snow properties effects on millimeter-wave backscatter.
Williams, L.D., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.300-306, 12 refs.
Gallagher, J.G., Sugden, D.E., Birnie, R.V.
Snow surface, Backscattering, Radio waves.

42-3944
Millimeter-wave measurements and analysis of snow-covered ground.
Currie, N.C., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.307-318, 6 refs.
Snow surface, Radio waves, Backscattering, Regelation.

42-3945
Backscatter and attenuation by falling snow and rain at 96, 140, and 225 GHz.
Nemarich, J., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.319-329, 7 refs.
Wellman, R.J., Lacombe, J.
Snowfall, Radio waves, Backscattering, Attenuation.

42-3946
Fluctuations in millimeter-wave signals propagated through inclement weather.
Bohlander, R.A., et al, *IEEE transactions on geoscience and remote sensing*, May 1988, 26(3), p.343-354, 14 refs.
Snowfall, Radio waves, Backscattering, Attenuation.

42-3947
Airborne thermal mapping for winter highway maintenance using the Barr and Stroud IR18 thermal video frame scanner.
Stove, G.C., et al, *International journal of remote sensing*, July 1988, 8(7), p.1077-1084, 9 refs.
Kennie, T.J.M., Harrison, A.
Remote sensing, Mapping, Winter maintenance, Road maintenance.

42-3948
Problems of geocryology. [Problemy geokriologii],
Mel'nikov, P.I., ed, Moscow, Nauka, 1988, 195p., In Russian. Papers prepared in anticipation of the 5th International Conference on Permafrost, Trondheim, Norway, Aug. 2-5, 1988. For individual papers see 42-3949 through 42-3978.
Geocryology, Permafrost, Engineering geology, Frozen ground, Active layer, Freeze thaw cycles, Climatic factors.

42-3949
Alpine cryolithozone and geocryological belts. [Al'piiskaia kriolitozona i geokriologicheskaia poiasnost'],
Gorbunov, A.P., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.6-12, 22 refs., In Russian.
Geocryology, Permafrost distribution, Alpine glaciation, Landforms, Mountains, Snow line.

42-3950
Features of rock-stream formation in a bald-peak mountain belt. [Osobennosti formirovaniia kurumov gol'tsovogo poiasa gor],
Romanovskiĭ, N.N., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.12-18, 1 ref., In Russian.
Rock streams, Permafrost, Alpine glaciation, Geocryology, Topographic features, Ground ice, Ice formation, Mountains.

42-3951
Methodical basis of permafrost as a science of lithogenesis in the permanent cold regions of the Earth. [Metodologicheskie osnovy kriolitologii—uchenie o litogeneze v zonakh ustoĭchivogo okhlazhdeniia Zemli],
Popov, A.I., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.18-23, In Russian.
Permafrost distribution, Permafrost thickness, Cryogenic soils, Frozen ground mechanics, Seasonal freeze thaw, Ground ice, Soil water migration.

42-3952
Role of cryogenesis in the system of natural processes. [Mesto kriogeneza v sisteme prirodnykh protsessov Zemli],
Konishchev, V.N., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.23-30, 13 refs., In Russian.
Permafrost distribution, Geocryology, Ground ice, Glacier flow, Origin, Frozen ground strength, Ice formation.

42-3953
Stationary investigations of permafrost. [Razvitie statsionarnykh issledovaniĭ kriolitozony],
Pavlov, A.V., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.30-34, 6 refs., In Russian.
Gravis, G.F.
Permafrost physics, Geocryology, Engineering geology, Research projects, Tests, Organizations.

42-3954
Permafrost and the zone of hydrates of natural gas (problems of interrelation and interaction). [Kriolitozona i zona gidratov prirodnykh gazov (problema vzaimootnosheniia i vzaimodeĭstviia)],
Romanovskiĭ, N.N., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.35-41, 11 refs., In Russian.
Permafrost physics, Hydrates, Geocryology, Ground ice, Temperature effects, Paleoclimatology, Climatic factors.

42-3955
Cryodiagenesis in underwater sedimentation. [Kriodiagenez v usloviiakh subakval'nogo osadkonakopleniia],
Maslov, A.D., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.41-51, 12 refs., In Russian.
Subsea permafrost, Bottom sediment, Geocryology, Frozen ground mechanics, Landslides, Temperature effects, Acoustic measurement, Seismic surveys.

42-3956
Role of permafrost in formation of edoma complex. [Rol' kriolitogeneza v formirovanii edomnoĭ svity],
Rozenbaum, G.E., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.51-55, 7 refs., In Russian.
Permafrost physics, Geocryology, Ice veins, Edoma complex, Origin, Thermokarst, Ice formation, Stratigraphy.

42-3957
Polygonal-vein ice in the Yenisey North. [Poligonal'no-zhil'nye l'dy Eniseĭskogo Severa],
Tumel', N.V., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.56-61, 6 refs., In Russian.
Permafrost distribution, Ice veins, Ground ice, Polygonal topography, Paleoclimatology, Bottom sediment, Climatic factors, River basins.

42-3958
Petrology of underground ice. [Petrologiia podzemnykh l'dov],
Solomatin, V.I., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.61-64, 4 refs., In Russian.
Ground ice, Ice structure, Lithology, Ice formation, Geology, Recrystallization.

42-3959
Columnar ice. [Stebel'kovyĭ led],
Tarakanov, A.I., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.65-71, 3 refs., In Russian.
Bykasov, V.E.
Ice crystal structure, Ice formation, Ground water, Temperature effects, Porosity, Microstructure, Humidity, Hoarfrost.

42-3960
Perennial stratified ice in the Quaternary deposits of Ural and Pay-Khoy. [Mnogoletnie plastovye l'dy chetvertichnykh otlozheniĭ Urala i Paĭ-Khoia],
Oberman, N.G., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.71-77, 16 refs., In Russian.
Quaternary deposits, Geomorphology, Permafrost, Ice formation, Ground water, Water chemistry, Paleoclimatology, Ice composition, USSR—Ural Mountains.

42-3961
Genesis of over-ice stratus at the Ice Mountain. [O genezise nadlednoĭ tolshchi obnazheniia "Ledianaia gora"],
Kuznetsova, T.P., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.77-84, 14 refs., In Russian.
Karpov, E.G.
Permafrost structure, Ground ice, Glacier ice, Permafrost beneath rivers, Banks (waterways), Pleistocene, Meteorological factors.

42-3962
Seasonal freeze-thaw dynamics under destruction of soil surface strata in Turana Range. [Dinamika sezonnogo protaivaniia-promerzaniia gruntov pri unichtozhenii napochvennykh pokrovov v khrebte Turana],
Zabolotnik, S.I., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.84-92, 15 refs., In Russian.
Sorokina, Z.G.
Permafrost preservation, Seasonal freeze thaw, Permafrost beneath structures, Geocryology, Climatic factors, Vegetation factors, Landscapes, Plant ecology.

42-3963
Composition of pore water in saline permafrost in West Siberia. [Sostav porovykh rastvorov zasolennykh merzlykh porod Zapadnoĭ Sibiri],
Dubikov, G.I., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.92-101, 8 refs., In Russian.
Ivanova, N.V.
Permafrost origin, Saline soils, Ground water, Ground ice, Water chemistry, Porosity, Chemical analysis, Geochemistry, Pleistocene.

42-3964
Mineral and petrological description of deposits of ice complexes in central Yakutia. [Mineralogo-petrograficheskaia kharakteristika otlozheniĭ ledovykh kompleksov Tsentral'noĭ lAkutii],
Zigert, Kh., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.101-107, 10 refs., In Russian.
Glacial deposits, Geomorphology, Geocryology, Minerals, Soil erosion, Microstructure, Pleistocene, Soil formation, Grain size, USSR—Yakutia.

42-3965
Multifacial complex of late Pleistocene syn- and epicryogenic deposits in the Main River valley (Chukotka). [Polifatsial'nyĭ kompleks pozdneplefstotsenovykh sin- i epikriogennykh otlozheniĭ doliny r. Maln (Chukotka)],
Kotov, A.N., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.108-115, 5 refs., In Russian.
Geocryology, Permafrost, Glacial deposits, Edoma complex, Pleistocene, River basins, Valleys.

42-3966
Geocryological zoning of East Siberia. [Geokriologicheskoe raionirovanie Vostochnoĭ Sibiri],
Shats, M.M., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.115-120, 16 refs., In Russian.
Permafrost distribution, Geocryology, Permafrost thickness, Permafrost thermal properties, Climatic factors.

42-3967
Gas permeability of frozen coarse rocks. [Gazopronitsaemost' merzlykh krupnooblomochnykh porod],
Olovin, B.A., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.120-124, 15 refs., In Russian.
Frozen rocks, Permafrost physics, Ground ice, Permeability, Gas inclusions, Porosity, Ground water, Grain size.

42-3968
Tillable land and hydrotechnical soil improvement in central Yakutia. [Podbor pakhotnykh ugodiĭ i osushchestvlenie gidrotermicheskoĭ melioratsii v usloviiakh Tsentral'noĭ IAkutii],
Pavlov, A.V., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.124-130, 16 refs., In Russian.
Grave, N.A.
Permafrost thermal properties, Land reclamation, Hydrothermal processes, Ground ice, Active layer, Agriculture, Cryogenic soils, Climatic factors, Irrigation, USSR—Yakutia.

42-3969
Stability of geocryosystems. [Ustoĭchivost' kriogeosistem],
Chigir, V.G., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.131-136, 7 refs., In Russian.
Permafrost thermal properties, Frozen ground strength, Geocryology, Seasonal freeze thaw, Cryogenic soils, Heat transfer, Vegetation factors, Forest tundra.

42-3970
Thermal and mass transfer and structure formation in freezing peat. [Teplomassoperenos i strukturoobrazovanie v promerzaiushchem torfe],
Gamaiunov, N.I., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.136-143, 17 refs., In Russian.
Stotland, D.M., Tovbin, I.B., Kazakov, S.L.
Heat transfer, Mass transfer, Permafrost structure, Permafrost thickness, Peat, Ground ice, Cryogenic soils, Temperature effects, Moisture, Soil compaction.

42-3971
Electrical sounding by means of transition processes for geocryologic mapping. [Elektrozondirovanie metodom perekhodnykh protsessov pri geokriologicheskom kartirovanii],
Nim, IU.A., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.143-148, 7 refs., In Russian.
Permafrost distribution, Geocryology, Geomorphology, Electromagnetic prospecting, Sounding, Mapping, Electric fields.

42-3972
Ion migration and reverse osmosis in frozen soils. [Migratsiia ionov i obratnyĭ osmos v merzlykh porodakh],
Lebedenko, IU.P., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.148-152, In Russian.
Permafrost physics, Ion diffusion, Soil water migration, Salinity, Soil composition, Ground ice, Unfrozen water content, Thermodynamics.

42-3973
Oxygen-isotope composition of underground ice. [Izotopno-kislorodnyĭ sostav podzemnykh l'dov],
Arkhangelov, A.A., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.152-158, 18 refs., In Russian.
Koniakhin, M.A., Mikhalev, D.V., Solomatin, V.I.
Ground ice, Ice composition, Oxygen isotopes, Isotope analysis, Chemical analysis, Distribution, Snowmelt.

42-3974
Foundation construction in discontinuous permafrost. [Fundamentostroenie v usloviiakh nesploshnogo rasprostraneniia vechnomerzlykh gruntov],
Khrustalev, L.N., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.159-164, 9 refs., In Russian.
Permafrost preservation, Foundations, Discontinuous permafrost, Cold weather construction, Artificial freezing, Soil stabilization, Engineering.

42-3975
Principles of over-shaft foundations on permafrost. [Printsipy fundirovaniia nadshakhtnykh zdaniĭ na vechnomerzlykh gruntakh],
Gur'ianov, I.E., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.164-174, In Russian., For modified English version see 42-4210. 13 refs.
Permafrost beneath structures, Foundations, Taliks, Countermeasures, Ground thawing, Mining, Pits (excavations), Analysis (mathematics).

42-3976
Rock streams as a foundation for structures. [Kurumy kak osnovaniia tekhnogennykh sooruzheniĭ],
Senuk, D.P., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.175-180, 6 refs., In Russian.
ZheleznIak, I.I., Ivin, I.L., IAdrishchenskiĭ, G.E.
Rock streams, Geocryology, Foundations, Roads, Permafrost thermal properties, Ice melting, Snowmelt, Temperature effects, Seasonal variations.

42-3977
Ventilated folding foundations on fillings. [Skladchatye ventiliruemye fundamenty na podsypke],
Berdichevskiĭ, IU.V., et al, Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.180-186, 6 refs., In Russian.
Goncharov, IU.M.
Permafrost beneath structures, Foundations, Ventilation, Concrete structures, Models, Cooling, Thermal insulation.

42-3978
Prevention of cryogenic deformation of roadbeds by using polymers. [Ustranenie kriogennykh deformatsiĭ zemlianogo polotna s ispol'zovaniem polimernykh materialov],
Dydyshko, P.I., Problemy geokriologii (Problems of geocryology). Edited by P.I. Mel'nikov, Moscow, Nauka, 1988, p.186-193, 7 refs., In Russian.
Roadbeds, Geocryology, Permafrost beneath structures, Frozen ground settling, Polymers, Frost heave, Deformation, Countermeasures, Thermal insulation, Frozen ground structure.

42-3979
Proceedings.
International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988, Trondheim, Norway, Tapir Publishers, [1988], 1533p. (2 vols.), Refs. passim. For individual papers see 42-3980 through 42-4267.
Senneset, K., ed.
Permafrost distribution, Permafrost, Geocryology, Ground water, Active layer, Meetings.

42-3980
Paleoclimate and permafrost in the Mackenzie Delta.
Allen, D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.33-38, 24 refs.
Michel, F., Judge, A.
Permafrost distribution, Permafrost depth, Paleoclimatology, Glaciation, Sedimentation, Surface temperature, Models, Deltas, Canada—Northwest Territories—Mackenzie River Delta.

42-3981
Meteorological conditions influence on the permafrost ground in Svea grva, Spitsbergen.
Bakkehöi, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.39-43, 5 refs.
Bandis, C.
Permafrost, Snow cover effect, Active layer, Soil water, Meteorological data, Heat flux, Time factor, Salinity, Ground thawing, Tundra, Norway—Spitsbergen.

42-3982
Thermal currents of active layer in Hornsund area.
Chmal, H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.44-49, 9 refs.
Klementowski, J., Migala, K.
Permafrost thermal properties, Active layer, Thaw depth, Freeze thaw cycles, Snow cover effect, Air temperature, Seasonal variations, Norway—Spitsbergen.

42-3983
Freezing-point depression at the base of ice-bearing permafrost on the north slope of Alaska.
Collett, T.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.50-55, 14 refs.
Bird, K.J.
Permafrost thermal properties, Ground ice, Sediments, Salinity, Ions, Freezing points, Wells, Measuring instruments, Grain size.

42-3984
Natural ground temperatures in upland bedrock terrain, interior Alaska.
Collins, C.M., et al, MP 2360, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.56-60, 20 refs.
Haugen, R.K., Kreig, R.A.
Taiga, Permafrost thermal properties, Soil temperature, Discontinuous permafrost, Slope orientation, Vegetation, Altitude, Topographic effects, United States—Alaska.
Surface and subsurface ground temperature measurements were made in drill holes representing a variety of permafrost/non-permafrost, slope exposure, elevation, vegetation, and soil conditions within the upland taiga of interior Alaska. Algorithms representing equivalent latitude and air temperature/elevation relationships are developed to more precisely define permafrost/non-permafrost boundaries within this complex terrain.

42-3985
Thawing in permafrost—simulation and verification.
Corapcioglu, Y.M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.61-66, 16 refs.
Panday, S.
Permafrost thermal properties, Ground thawing, Frozen ground settling, Soil water, Porosity, Saturation, Ice melting, Mathematical models.

42-3986
Schefferville snow-ground interface temperatures.
Desrochers, D.T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.67-72, 22 refs.
Granberg, H.B.
Snow cover effect, Soil temperature, Tundra, Permafrost distribution, Thermal regime, Forest land, Temperature variations, Alpine tundra, Snow temperature, Canada—Quebec—Schefferville.

42-3987
Long-term permafrost and climate monitoring program in Northern Canada.
Etkin, D.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.73-77, 9 refs.
Headley, A., Stoker, K.J.L.
Permafrost thermal properties, Tundra, Taiga, Soil temperature, Meteorological data, Snow depth, Soil water.

42-3988
Permafrost-climatic characteristics of different classes.
Gavrilova, M.K., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.78-83, 2 refs.
Permafrost distribution, Freeze thaw cycles, Geocryology, Seasonal variations, Climatic factors, Heat balance, Air temperature.

42-3989
Late Quaternary solifluction in central Spitsbergen.
Klysz, P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.84-88, 17 refs.
Lindner, L., Marks, L., Wysokinski, L.
Periglacial processes, Solifluction, Glacial deposits, Geomorphology, Paleoclimatology, Quaternary deposits, Soil creep, Slope processes, Particle size distribution, Norway—Spitsbergen.

42-3990
Geomorphological effects and recent climatic response of snowpatches and glaciers in the western Abisko Mountains, Sweden.
Lindh, L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.89-94, 21 refs.
Nyberg, R., Rapp, A.
Mountain glaciers, Snow cover distribution, Geomorphology, Permafrost distribution, Climatic factors, Nivation, Solifluction, Slope processes, Mass balance, Sweden—Abisko Mountains.

42-3991
Gas-hydrate accumulations and permafrost development.
Makogon, IU.F., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.95-101.
Permafrost thickness, Hydrates, Natural gas, Thermal regime, Engineering, Freeze thaw cycles, Phase transformations.

42-3992
Hypothesis for the Holocene permafrost evolution.
Maksimova, L.N., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.102-106, 12 refs.
Romanovskiĭ, V.E.
Permafrost distribution, Freeze thaw cycles, Soil freezing, Paleoclimatology, Climatic changes, Pleistocene, USSR.

42-3993
Division and temperature condition of the last glaciation in Northern China.
Sun, J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.107-112, 22 refs.
Li, X.
Permafrost distribution, Glaciation, Periglacial processes, Paleoclimatology, Fossils, Pleistocene, China.

42-3994
Shoreline permafrost in Kangiqsualujjuaq Bay, Ungava, Quebec.
Allard, M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.113-118, 19 refs.
Seguin, M.K., Pelletier, Y.
Permafrost distribution, Coastal topographic features, Shoreline modification, Permafrost physics, Tides, Shore erosion, Subsea permafrost, Swamps, Canada—Quebec—Kangiqsualujjuaq Bay.

42-3995
Permafrost data and information: status and needs.
Barry, R.G., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.119-122, 27 refs.
Permafrost physics, Frozen ground, Periglacial processes, Permafrost thickness, Permafrost thermal properties, Remote sensing, Boreholes, Environments.

42-3996
Geocryological map of Mongolian People's Republic.
Baulin, V.V., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.123-126, 3 refs.
Permafrost distribution, Geocryology, Permafrost thermal properties, Mapping, Mongolia.

42-3997
Geotechnical and geothermal conditions of near-shore sediments, southern Beaufort Sea, Northwest Territories, Canada.
Dallimore, S.R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.127-131, 9 refs.
Kurfurst, P.J., Hunter, J.A.M.
Subsea permafrost, Frozen ground, Shoreline modification, Geothermy, Sediments, Ocean bottom, Bottom sediment, Engineering, Geology, Beaufort Sea.

42-3998
Massive ground ice associated with glaciofluvial sediments, Richards Island, N.W.T., Canada.
Dallimore, S.R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.132-137, 17 refs.
Wolfe, S.A.
Ground ice, Sediments, Permafrost distribution, Glacial deposits, Ice volume, Radar echoes, Paleoclimatology, Boreholes, Canada—Northwest Territories—Richards Island.

42-3999
Permafrost aggradation along an emergent coast, Churchill, Manitoba.
Dyke, L., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.138-142, 11 refs.
Permafrost distribution, Shores, Tides, Engineering, Boreholes, Soil temperature, Thaw depth, Canada—Manitoba—Churchill.

42-4000
Characteristics of the massive ground ice body in the western Canadian Arctic (11).
Fujino, K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.143-147, 9 refs.
Ground ice, Periglacial processes, Ice sampling, Drill core analysis, Origin, Ice volume, Ice cores, Stratigraphy.

42-4001
Measurements of active layer and permafrost parameters with electrical resistivity, self potential and induced polarization.
Gahe, E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.148-153, 6 refs.
Allard, M., Seguin, M.K., Fortier, R.
Active layer, Permafrost physics, Electrical resistivity, Freeze thaw cycles, Shores, Ground ice, Salinity, Clay soils.

42-4002
Alpine permafrost zone of the U.S.S.R.
Gorbunov, A.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.154-158, 5 refs.
Permafrost distribution, Alpine glaciation, Geocryology, Temperature gradients, Mountains.

42-4003
On the spatial dynamics of snowcover-permafrost relationships at Schefferville.
Granberg, H.B., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.159-164, 26 refs.
Permafrost thermal properties, Frozen ground temperature, Snow cover effect, Alpine tundra, Forest land, Snow accumulation, Snow depth, Vegetation, Seasonal variations, Models.

42-4004
Perennial changes in natural complexes of cryolithozone.
Gravis, G.F., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.165-169, 17 refs.
Moskalenko, N.G., Pavlov, A.V.
Permafrost, Geocryology, Snow cover effect, Seasonal freeze thaw, Active layer, Thaw depth, Air temperature, Revegetation.

42-4005
Permafrost and its altitudinal zonation in N. Lapland.
Jeckel, P.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.170-175, 42 refs.
Permafrost distribution, Geomorphology, Thermistors, Frost mounds, Altitude, Tundra, Polygonal topography, Thermokarst lakes, Soil temperature, Snow temperature, Finland.

42-4006
Model for mapping permafrost distribution based on landscape component maps and climatic variables.
Jorgenson, M.T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.176-182, 18 refs.
Kreig, R.A.
Permafrost distribution, Landscape types, Photointerpretation, Mapping, Climatic changes, Computer applications, Vegetation, Heat balance, Soil temperature, Models.

42-4007
Permafrost sites in Finnish Lapland and their environment occurrences.
King, L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.183-188, 52 refs.
Seppälä, M.
Permafrost thickness, Permafrost distribution, Snow accumulation, Discontinuous permafrost, Vegetation, Wind erosion, Environments, Finland—Lapland.

42-4008
Cryogenic complexes as the basis for prediction maps.
Klimovskiĭ, I.V., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.189-193, 7 refs.
Gotovtsev, S.P.
Permafrost heat balance, Cryogenics, Topographic features, Mapping, Permafrost control, Human factors.

42-4009
Glacial history and permafrost in the Svalbard area.
Landvik, J.Y., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.194-198, 15 refs.
Mangerud, J., Salvigsen, O.
Permafrost distribution, Glaciation, Periglacial processes, Permafrost thickness, Sea level, Paleoclimatology, Glacial geology, Geologic processes, Norway—Svalbard.

42-4010
Regional factors of permafrost distribution and thickness, Hudson Bay coast, Quebec, Canada.
Lévesque, R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.199-204, 29 refs.
Allard, M., Seguin, M.K.
Permafrost distribution, Permafrost thickness, Landscape types, Geomorphology, Tundra, Forest lines, Quaternary deposits, Geocryology, Vegetation, Snow depth, Canada—Quebec.

42-4011
Pinus hinganensis and permafrost environment in the Mt. Da-Hinganling, Northeast China.
Lu, G., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.205-207, 4 refs.
Permafrost distribution, Vegetation, Glaciation, Climatic changes, Mountains, Forest lines, Paleoclimatology, Revegetation, Pleistocene, China—Da-Hinganling Mountain.

42-4012
Natural geosystems of the plain cryolithozone.
Mel'nikov, E.S., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.208-212, 8 refs.
Permafrost, Geocryology, Ecosystems, Seasonal freeze thaw, Mapping, Forecasting.

42-4013
Predicting the occurrence of permafrost in the Alaskan discontinuous zone with satellite data.
Morrissey, L.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.213-217, 10 refs.
Discontinuous permafrost, Permafrost forecasting, Permafrost distribution, Remote sensing, Models, Vegetation, Mapping.

42-4014
Modern methods of stationary engineering—geologic investigations of cryolitic zone.
Pavlov, A.V., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.218-223, 21 refs.
Tsibul'skiĭ, V.R.
Permafrost, Geocryology, Geological surveys, Accuracy, Engineering, Measuring instruments.

42-4015
Petrographic characteristics of massive ground ice, Yukon Coastal Plain, Canada.
Pollard, W.H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.224-229, 13 refs.
Dallimore, S.R.
Ground ice, Sediments, Ice structure, Rock properties, Ice wedges, Snow ice.

42-4016
Content of North American cryolithological map.
Popov, A.I., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.230-232.
Rosenbaum, G.E.
Permafrost distribution, Mapping, Frozen ground, Geocryology, Classifications, Freeze thaw cycles.

42-4017
New data on permafrost of Kodar-Chara-Udokan region.
Romanovskiĭ, N.N., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.233-236, 6 refs.
Permafrost distribution, Geocryology, Permafrost thickness, Permafrost thermal properties, Mountains, Taliks, USSR—Transbaikal.

42-4018
Mean annual temperature of grounds in East Siberia.
Zamolotchikova, S.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.237-240, 8 refs.
Frozen ground temperature, Permafrost thermal properties, Soil temperature, Altitude, Heat transfer, Soil surface, USSR—Siberia.

42-4019
Alpine permafrost in eastern North America: a review.
Schmidlin, T.W., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.241-246, 34 refs.
Permafrost distribution, Climatic factors, Alpine glaciation, Air temperature, Mountains, Forest lines, Mapping.

42-4020
Seasonal freezing of soils in Central Asia mountains.
Severskiĭ, I.V., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.247-252, 6 refs.
Severskiĭ, E.V.
Discontinuous permafrost, Seasonal freeze thaw, Snow depth, Geocryology, Soil freezing, Mountains, Seasonal variations, Alpine glaciation.

42-4021
Alpine permafrost occurrence at Mt. Taisetsu, central Hokkaido, in northern Japan.
Sone, T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.253-258, 11 refs.
Takahashi, N., Fukuda, M.
Permafrost distribution, Soil temperature, Active layer, Permafrost depth, Alpine glaciation, Mountains, Temperature gradients, Cracks, Frost mounds, Japan—Taisetsu, Mountain.

42-4022
Rock glaciers and glaciation of the Central Asia mountains.
Titkov, S.N., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.259-262, 29 refs.
Rock glaciers, Alpine glaciation, Glacier oscillation, Mountains, Paleoclimatology, Origin.

42-4023
Geocryogenic geomorphology, east flank of the Andes of Mendoza, at 33 deg S.L.
Trombotto, D., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.263-267, 16 refs.
Geocryology, Geomorphology, Discontinuous permafrost, Periglacial processes, Mountains, Rock glaciers, Talus, Argentina—Andes.

42-4024
Outer limit of permafrost during the last glaciation in east China.
Xu, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.268-273, 15 refs.
Xu, D., Pan, B.
Fossils, Permafrost distribution, Glaciation, Paleoclimatology, Periglacial processes, Alpine glaciation, Pleistocene, China.

42-4025
Geocryological map of the USSR of 1:2,500,000 scale.
Ershov, E.D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.274-277.
Geocryology, Permafrost distribution, Frozen ground temperature, Topographic features, Maps, Soil temperature, Permafrost thickness, Cryogenic structures, USSR.

42-4026
Permafrost zone evolution induced by destruction of soil overlying cover in the Amur North.
Zabolotnik, S.I., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.278-283, 5 refs.
Permafrost transformation, Active layer, Freeze thaw cycles, Permafrost depth, Snow cover effect, Degradation, Soils, Seasonal freeze thaw, Mosses, USSR—Amur River.

42-4027
Distribution of shallow permafrost on Mars.
Zent, A.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.284-289, 10 refs.
Fanale, F.P., Salvail, J.R., Postawko, S.E.
Permafrost distribution, Permafrost thickness, Mars (planet), Surface temperature, Models, Planetary environments, Water vapor.

42-4028
On the method of cryohydrogeochemical investigations.
Anisimova, N.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.290-293, 6 refs.
Geocryology, Permafrost, Hydrogeology, Geochemistry, Ground ice, Soil water, Ions, Sampling.

42-4029
Hydrochemistry of rivers in mountain permafrost at 33 deg L.S., Mendoza—Argentina.
Buk, E.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.294-298, 11 refs.
Glacial rivers, Water chemistry, Permafrost, River flow, Mountains, Glacial deposits, Water temperature, Precipitation (meteorology), Rock glaciers, Ions, Argentina—Mendoza.

42-4030
Frost line behaviour around a cooled cavity.
Cames-Pintaux, A.M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.299-303, 16 refs.
Aguirre-Puente, J.
Freeze thaw cycles, Underground pipelines, Stefan problem, Underground storage, Gas pipelines.

42-4031
Frost heave model of sandy gravel in open system.
Chen, X.B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.304-307, 8 refs.
Wang, Y.Q., He, P.
Frost heave, Gravel, Frost penetration, Sands, Models, Frost resistance, Soil water.

42-4032
Observations of moisture migration in frozen soils during thawing.
Cheng, G., et al, MP 2373, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.308-312, 14 refs.
Chamberlain, E.J.
Ground thawing, Soil water migration, Frozen ground, Water content, Tests, Ice lenses, Frost heave, Ice formation.
Open and closed system tests on prefrozen silt and clay were conducted to investigate moisture migration in frozen soils during thawing. In all tests, an increase in water content just below the thawing front was observed. In some cases, a thawing fringe, ice lenses and frost heave were recorded. Water migration into the frozen part of thawing soil was greatly reduced after a continuous ice lens had formed across a sample. A regelation mechanism for ice formation in frozen soil during thawing is suggested.

42-4033
Geocryologic studies aimed at nature conservation.
Chizhov, A.B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.313-315.
Gavrilov, A.V., Pizhankova, E.I.
Geocryology, Permafrost preservation, Permafrost control, Human factors, Environmental protection.

42-4034
Iron and clay minerals in periglacial environment.
Chodak, T., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.316-319, 8 refs.
Active layer, Clay minerals, Permafrost physics, Periglacial processes, Chemical analysis, X ray diffraction, Weathering.

42-4035
Frozen soil macro- and microtexture formation.
Chuvilin, E.M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.320-323.
IAzynin, O.M.
Cryogenic textures, Frozen ground physics, Soil structure, Soil formation, Permafrost physics, Soil freezing, Microstructure.

42-4036
Acoustics and unfrozen water content determination.
Deschatres, M.H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.324-328, 18 refs.
Cohen-Tenoudji, F., Aguirre-Puente, J., Khastou, B.
Unfrozen water content, Acoustics, Porous materials, Freezing, Attenuation, Ultrasonic tests, Temperature effects, Stefan problem, Sound transmission.

42-4037
Thermodynamics theory forecasting frozen ground.
Ding, D., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.329-332, 8 refs.
Frozen ground thermodynamics, Permafrost thermal properties, Geocryology, Forecasting, Heat balance.

42-4038
Pore solutions of frozen ground and its properties.
Dubikov, G.I., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.333-338, 2 refs.
Ivanova, N.V., Aksenov, V.I.
Frozen ground physics, Soil water, Solutions, Unfrozen water content, Freezing points, Porosity, Saline soils, Soil strength, Chemical analysis.

42-4039
Formation problem of thick ice streaks, ice saturated horizons in permafrost.
Fel'dman, G.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.339-343, 4 refs.
Permafrost, Ground ice, Ice formation, Soil water migration, Ice volume, Ice lenses.

42-4040
Frost heave.
Förland, K.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.344-348, 1 ref.
Förland, T., Ratkje, S.K.
Frost heave, Heat transfer, Thermodynamics, Soil water migration, Pressure, Freeze thaw cycles, Analysis (mathematics).

42-4041
Parametric effects in the filtration free convection model for patterned ground.
Gleason, K.J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.349-354, 17 refs.
Krantz, W.B., Caine, N.
Patterned ground, Frozen ground mechanics, Thaw depth, Models, Convection, Ground thawing, Frost action, Viscosity, Thermal conductivity.

42-4042
Heat and moisture transport during annual freezing and thawing.
Gosink, J.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.355-360, 19 refs.
Kawasaki, K., Osterkamp, T.E., Holty, J.
Freeze thaw cycles, Soil water migration, Heat transfer, Permafrost thermal properties, Soil temperature, Water content, Environmental impact, Models, Agriculture.

42-4043
Summer thawing of different grounds—an empirical model for western Spitsbergen.
Grześ, M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.361-363, 9 refs.
Ground thawing, Thaw depth, Active layer, Permafrost, Seasonal variations, Models, Norway—Spitsbergen.

42-4044
Observations on the redistribution of moisture in the active layer and permafrost.
Harris, S.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.364-369, 26 refs.
Permafrost hydrology, Active layer, Soil water migration, Temperature effects, Permafrost thermal properties, Ground thawing, Frost mounds.

42-4045
Mathematical model of frost heave in granular materials.
Piper, D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.370-376, 20 refs.
Holden, J.T., Jones, R.H.
Frost heave, Water pressure, Soil freezing, Grain size, Mathematical models, Forecasting, Temperature effects, Ice lenses.

42-4046
Electric conductivity of an ice core obtained from massive ground ice.
Horiguchi, K., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.377-380, 4 refs.
Ice electrical properties, Ground ice, Soil structure, Electrical resistivity, Sediments, Ice volume, Ice sampling.

42-4047
Physical-chemical types of cryogenesis.
Konishchev, V.N., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.381-383, 3 refs.
Rogov, V.V., Poklonnyi, S.A.
Permafrost weathering, Geocryology, Sediments, Freeze thaw cycles, Degradation, Chemical properties, Experimentation.

42-4048
Temperature of ice lens formation in freezing soils.
Konrad, J.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.384-389, 7 refs.
Ice lenses, Ice formation, Ground ice, Soil freezing, Temperature effects, Pressure, X ray analysis.

42-4049
Microstructure of frozen soils examined by SEM.
Kumai, M., MP 2361, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.390-395, 8 refs.
Frozen ground physics, Soil structure, Microstructure, Scanning electron microscopy, X ray analysis, Clay, Porosity, Ice sublimation, Chemical analysis, Grain size.
Physical properties of bentonite, dickite and sand samples for freezing experiments were examined with a scanning electron microscope (SEM), and elemental compositions were measured with an energy dispersive x-ray (EDX) analyzer. Bentonite from Umiat, Alaska, is a typical cold-regions swelling clay with thin, crumpled and folded structures. The soil samples with relatively high water contents were frozen, and the frozen characteristics were examined with the SEM equipped with a cold stage. SEM images of frozen bentonite and dickite showed characteristic segregated ice and coagulated soil patterns formed during freezing processes and porous structures formed during the sublimation stage of ice in frozen soils. However, frozen sand showed no typical ice segregation and sand grain coagulation because of the large grain size. The freeze sublimation process of frozen clay and silt increases the permeability to water vapor because of the porous structure formation.

42-4050
Cryogenic deformations in fine-grained soils.
Lebedenko, IU.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.396-400.
Shevchenko, L.V.
Geocryology, Soil structure, Soil freezing, Ground thawing, Salinity, Grain size, Soil water, Saturation, Deformation, Frozen ground physics, Frost heave.

42-4051
Properties of geochemical fields in the permafrost zone.
Makarov, V.N., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.401-405, 17 refs.
Permafrost control, Geochemistry, Active layer, Suprapermafrost ground water, Water pollution, Chemical analysis.

42-4052
Dynamics of summer ground thawing in the Kaffiöyra Plain (NW Spitsbergen).
Marciniak, K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.406-411, 5 refs.
Przybylak, R., Szczepanik, W.
Soil mechanics, Rheology, Ground thawing, Beaches, Thaw depth, Meteorological factors, Seasonal variations, Norway—Spitsbergen.

42-4053
Method for measuring the rate of water transport due to temperature gradients in unsaturated frozen soils.
Nakano, Y., et al, MP 2362, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.412-417, 7 refs.
Tice, A.R.
Temperature gradients, Frozen ground temperature, Soil water migration, Saturation, Water content, Analysis (mathematics).
A new experimental method is introduced to determine the rate of water movement caused by temperature gradients in unsaturated frozen soils. When a linear temperature distribution is imposed on a closed soil column with initially a uniform water content, a redistribution of water occurs in the column. As time increases, the profile of water is stabilized to approach a stationary profile, which is used to calculate the rate of water movement due to temperature gradients. The theoretical justification of the method is presented and the feasibility of the method is demonstrated by experiments with a marine-deposited clay.

42-4054
Filtration properties of frozen ground.
Olovin, B.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.418-424, 8 refs.
Permafrost structure, Frozen ground physics, Seepage, Thermodynamics, Permeability, Gases, Air temperature, Atmospheric pressure, Experimentation.

42-4055
Thermodiffuse ion transfer in grounds.
Ostroumov, V.E., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.425-430, 4 refs.
Frozen ground, Ion diffusion, Ground thawing, Temperature effects, Soil water migration, Analysis (mathematics).

42-4056
Electroacoustic effect in frozen soils.
Pavlov, A.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.431-435, 12 refs.
Frolov, A.D.
Geocryology, Frozen ground physics, Permafrost physics, Elastic waves, Ions, Acoustics, Electric fields.

42-4057
Spatial variation in seasonal frost heave cycles.
Perfect, E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.436-441, 22 refs.
Miller, R.D., Burton, B.
Frost heave, Rheology, Frost penetration, Frozen ground mechanics, Thaw consolidation, Soil physics, Statistical analysis, Seasonal variations.

42-4058
Direction of ion migration during cooling and freezing processes.
Qiu, G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.442-447, 8 refs.
Sheng, W., Huang, C., Zheng, K.
Frozen ground, Ion diffusion, Soil freezing, Temperature gradients, Water flow, Cooling, Ground water, Pressure, Solutions.

42-4059
Dynamics of permafrost active layer—Spitsbergen.
Repelewska-Pekalowa, J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.448-453, 10 refs.
Gluza, A.
Active layer, Ground thawing, Permafrost thermal properties, Soil mechanics, Topographic features, Soil water, Vegetation, Thaw depth.

42-4060
Investigation of electric potentials in freezing disperse systems.
Romanov, V.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.454-458, 18 refs.
Electric potential, Soil freezing, Permafrost physics, Ground ice, Solutions, Ice formation, Experimentation, Freezing.

42-4061
Physico-chemical nature of congelation strength.
Sa'el'ev, B.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.459-461.
Razumov, V.V., Gagarin, V.E.
Ice solid interface, Ice strength, Frozen ground strength, Ice accretion, Freezing, Solutions, Engineering, Chemical composition.

42-4062
Hydrogeochemistry of kryolithozone of Siberian Platform.
Schwartsev, S.L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.462-466.
Zuev, V.A., Bukaty, M.B.
Permafrost hydrology, Geochemistry, Ground water, Permafrost thickness, Water chemistry, Soil water.

42-4063
Formation of pedogenic carbonates on Svalbard: the influence of cold temperatures and freezing.
Sletten, R.S., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.467-472, 32 refs.
Soil composition, Soil freezing, Permafrost, Ice composition, Temperature effects, Water chemistry, Soil chemistry, Norway—Svalbard.

42-4064
Measurement of the unfrozen water content of soils: a comparison of NMR and TDR methods.
Smith, M.W., et al, MP 2363, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.473-477, 10 refs.
Tice, A.R.
Unfrozen water content, Soil water, Frozen ground, Temperature effects, Dielectric properties, Experimentation, Nuclear magnetic resonance, Reflectivity, Water content.
A laboratory testing program was carried out to compare two independent methods for determining the unfrozen water content of soils. With the TDR method, the unfrozen water content is inferred from a calibration curve of apparent dielectric constant versus volumetric water content, determined by experiment. Previously, precise calibration of the TDR technique was hindered by the lack of a reference comparison method, which NMR now offers. This has provided a much greater scope for calibration, including a wide range of soil types and temperature (unfrozen water content). The results of the testing program yielded a relationship between dielectric constant and volumetric unfrozen water content that is largely unaffected by soil type, although a subtle but apparent dependency on the texture of the soil was noted. It is suggested that this effect originates from the lower valued dielectric constant for adsorbed soil water. In spite of this, the general equation presented may be considered adequate for most practical purposes. The standard error estimate is 0.015 cu cm/cu cm, although, if desirable, this may be reduced by calibrating for individual soils. Brief guidelines on system and probe design are offered to help ensure that use of the TDR method will give results consistent with the relationship presented.

42-4065
Genesis of Arctic Brown soils (pergelic cryochrept) in Svalbard.
Ugolini, F.C., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.478-483, 23 refs.
Sletten, R.S.
Soil formation, Soil water, Soil chemistry, Cryoturbation, Vegetation, Solutions, Ions, Norway—Svalbard.

42-4066
Oxygen isotopic composition of some massive ground ice layers in the north of West Siberia.
Vaikmiae, R.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.484-488, 15 refs.
Solomatin, V.I., Karpov, E.G.
Ground ice, Oxygen isotopes, Ice formation, Isotope analysis, Origin, Ice detection, Cirques.

42-4067
Oxygen isotope variations in ice-wedges and massive ice.
Vasil'chuk, IU.K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.489-492, 9 refs.
Trofimov, V.T.
Ice wedges, Ground ice, Oxygen isotopes, Permafrost thermal properties, Origin, Ice volume, Paleoclimatology, Freeze thaw cycles, Pleistocene.

42-4068
Thermodynamic and mechanical conditions within frozen soils and their effects.
Williams, P.J., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.493-498, 24 refs.
Frozen ground mechanics, Frozen ground thermodynamics, Soil water migration, Frost heave, Soil structure, Microstructure, Origin, Solifluction, Rheology, Soil freezing, Freeze thaw cycles.

42-4069
Time and spatial variation of temperature of active layer in summer on the Kaffiöyra Plain (NW Spitsbergen).
Wójcik, G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.499-504, 14 refs.
Marciniak, K., Przybylak, R.
Active layer, Soil temperature, Permafrost thermal properties, Temperature distribution, Beaches, Tundra, Meteorological factors, Norway—Spitsbergen.

42-4070
Temperature of active layer at Bunger Oasis in Antarctica in summer 1978-79.
Wójcik, G., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.505-510, 5 refs.
Active layer, Soil temperature, Permafrost, Temperature distribution, Seasonal variations, Temperature gradients, Weather observations, Antarctica—Bunger Hills.
The results of the ground temperature measurements in the Bunger Oasis, Antarctica, from the summer season 1978-79 are presented and discussed in the paper with particular regards to temperature of active surface, vertical distribution and vertical gradients of temperature dependent on daytime and weather conditions. (Auth.)

42-4071
Chemical weathering in permafrost regions of Antarctica: Great Wall Station of China, Casey Station and Davis Station of Australia.
Xie, Y., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.511-515, 2 refs.
Chemistry, Permafrost weathering, Ion diffusion, Frost action, Frost weathering, Antarctica—Casey Station, Antarctica—Davis Station, Antarctica—Great Wall Station.
Although it is cold and dry in permafrost regions of Antarctica, chemical weathering and ion migration do occur. Some elements move upwards, and some downwards. $CaCO_3$ is leached downwards and deposited at a depth of about 1 m in the Great Wall Station area. Chemical weathering is stronger in the Great Wall Station of China than in the Casey and Davis Stations. This paper deals with the chemical weathering process of bedrock in some regions of the Antarctic. The samples were collected from the Great Wall Station of China in 1984 to 1986, Casey Station in 1984 and Davis Station in 1980. (Auth.)

42-4072
Water migration in saturated freezing soil.
Xie, X., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.516-521, 13 refs.
Deng, Y., Wang, J., Liu, J.
Soil water migration, Soil freezing, Frost heave, Saturation, Water content, Permeability, Frost penetration, Water flow, Forecasting.

42-4073
Effect of over consolidation ratio of saturated soil on frost heave and thaw subsidence.
Yamamoto, H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.522-527, 11 refs.
Ohrai, T., Izuta, H.
Frost heave, Ground thawing, Stresses, Frozen ground settling, Settlement (structural), Saturation, Soil water, Clays, Experimentation, Models.

42-4074
Mass transfer in frozen soils.
Ershov, E.D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.528-532, 1 ref.
Lebedenko, IU.P., Ershov, V.D., Chuvilin, E.M.
Frozen ground physics, Mass transfer, Ice formation, Ground ice, Temperature gradients, Solutions, Ground water, Moisture transfer, Frozen ground thermodynamics.

42-4075
Stress-strain prediction of frozen retaining structures regarding the frozen soil creep.
Zaretskiĭ, IU.K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.533-536, 7 refs.
Ter-Martirosian, Z.G., Shchobolev, A.G.
Frozen ground mechanics, Soil creep, Artificial freezing, Stress strain diagrams, Rheology, Models, Viscous flow, Plastic flow, Forecasting, Rock excavation.

42-4076
Study of frozen soils by geophysical methods.
Zykov, IU.D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.537-542, 14 refs.
Rozhdestvenskiĭ, N.IU., Chervinskais, O.P.
Frozen ground physics, Geophysical surveys, Acoustics, Electrical properties, Engineering, Soil structure, Soil composition

42-4077
Outflow of water in permafrost environment—Spitsbergen.
Bartoszewski, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.543-545, 6 refs.
Rodzik, J., Wojciechowski, K.
Permafrost hydrology, Runoff, Snow melting, Active layer, Seasonal variations, Floods, Norway—Spitsbergen.

42-4078
Modelling of average monthly streamflows from glacierized basins in Alaska.
Bjerkelie, D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.546-551, 8 refs.
Carlson, R.F.
Stream flow, Glacier melting, Runoff, Climatic factors, Hydrography, Temperature effects, Radiation balance, Mountains, Models, United States—Alaska.

42-4079
Protection of the environment in Jameson Land.
Back-Madsen, C., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.552-557, 8 refs.
Environmental protection, Permafrost preservation, Frost penetration, Landforms, Geomorphology, Soil temperature, Climatic factors, Engineering, Greenland—Jameson Land.

42-4080
Suspended sediment transport in arctic rivers.
Clark, M.J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.558-563, 20 refs.
Gurnell, A.M., Threlfall, J.L.
Sediment transport, Permafrost, Suspended sediments, River flow, Ground thawing, Snowmelt, Ice melting, Hydrology, Electrical resistivity, Finland.

42-4081
Buffering potential of carbonate soils in discontinuous permafrost terrain, against natural and man-induced acidification.
Dredge, L.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.564-567, 6 refs.
Discontinuous permafrost, Soil chemistry, Active layer, Leaching, Ground water.

42-4082
Physical and chemical characteristics of the active layer and near-surface permafrost in a disturbed homogeneous *Picea mariana* stand, Fort Norman, N.W.T., Canada.
Evans, K.E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.568-573, 31 refs.
Kershaw, G.P., Gallinger, B.J.
Active layer, Soil chemistry, Permafrost depth, Soil water, Ions, Forest ecosystems, Engineering, Canada—Northwest Territories—Fort Norman.

42-4083
Hydrology and geochemistry of a small drainage basin in upland tundra, northern Alaska.
Everett, K.R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.574-579, 6 refs.
Ostendorf, B.
Tundra, Hydrology, Geochemistry, Snowmelt, Runoff, Ions, United States—Alaska.

42-4084
Environment protection studies in permafrost zone of the USSR.
Grave, N.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.580-582, 5 refs.
Permafrost preservation, Environmental protection, Human factors, Permafrost control.

42-4085
Classification of ground water in permafrost areas on the Qinghai-Xizang Plateau, China.
Guo, P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.583-589, 9 refs.
Permafrost hydrology, Suprapermafrost ground water, Subpermafrost ground water, Taliks, Ground water, Classifications, China—Qinghai-Xizang Plateau.

42-4086
Permafrost hydrology of a small arctic watershed.
Kane, D.L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.590-595, 26 refs.
Hinzman, L.D.
Permafrost hydrology, Continuous permafrost, Watersheds, Stream flow, Precipitation (meteorology), Soil water, Active layer, Water balance, Snowmelt, Runoff.

42-4087
Flowing water effect on temperature in outwash deposits.
Karczewski, A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.596-598, 10 refs.
Sediments, Thermal properties, Water temperature, Soil temperature, Air temperature, Water flow, Soil erosion, Banks (waterways).

42-4088
***Salix arbusculoides* Anderss. Response to denuding and implications for northern rights-of-way.**
Kershaw, G.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.599-604, 34 refs.
Gallinger, B.J., Kershaw, L.J.
Environmental impact, Vegetation, Revegetation, Environmental protection, Plant ecology, Human factors, Ecosystems, Polar regions.

42-4089
Ablation of massive ground ice, Mackenzie Delta.
Lewkowicz, A.G., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.605-610, 14 refs.
Ground ice, Ablation, Permafrost, Heat transfer, Erosion, Slope orientation, Solar radiation, Canada—Northwest Territories—Tuktoyaktuk Peninsula.

42-4090
Hydrogeological features in Huolahe Basin of north Daxinganling, northeast China.
Lin, F., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.611-614, 1 ref.
Tu, G.
Permafrost hydrology, Ground water, Runoff, Subpermafrost ground water, Taliks, Geologic structures, China—Huolahe.

42-4091
Shallow occurrence of wedge ice: irrigation features.
Mandarov, A.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.615-617, 1 ref.
Ugarov, I.S.
Ice wedges, Ice melting, Irrigation, Permafrost, Water pipelines, Soil temperature, Surface temperature.

42-4092
Soil infiltration and snow-melt run-off in the Mackenzie Delta, N.W.T.
Marsh, P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.618-621, 21 refs.
Soil water, Snowmelt, Runoff, Permafrost thermal properties, Heat flux, Seepage, Active layer, Latent heat, Snow cover effect.

42-4093
Late Pleistocene discharge of the Yukon River.
Mason, O.K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.622-627, 33 refs.
Beget, J.E.
River flow, Remote sensing, River basins, Paleoclimatology, Pleistocene, Channels (waterways), Variations, United States—Alaska—Yukon River.

42-4094
Influence of water phenomena on depth of soil thawing in Oscar II Land, northwestern Spitsbergen.
Pietrucién, C., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.628-632, 17 refs.
Skowron, R.
Ground thawing, Thaw depth, Water content, Tundra, Permafrost beneath rivers, Permafrost beneath lakes, Permafrost hydrology, Norway—Spitsbergen.

42-4095
Influence of an organic mat on the active layer.
Riseborough, D.W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.633-638, 13 refs.
Burn, C.R.
Active layer, Vegetation factors, Permafrost thermal properties, Permafrost hydrology, Thermal regime, Mosses, Soil chemistry, Water flow, Canada—Yukon Territory—Mayo.

42-4096
Perennial discharge of subpermafrost groundwater in two small drainage basins, Yukon, Canada.
Van Everdingen, R.O., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.639-643, 4 refs.
Subpermafrost ground water, Water flow, Discontinuous permafrost, Water supply, Springs (water), Water chemistry, River basins, Canada—Yukon Territory.

42-4097
Wetland runoff regime in northern Canada.
Woo, M.-K., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.644-649, 18 refs.
Runoff, Snowmelt, Ground water, Surface waters, Seasonal variations, Ground thawing.

42-4098
Streamflow characteristics of the Qinghai (northern Tibetan) Plateau.
Yang, Z., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.650-655, 14 refs.
Woo, M.
Stream flow, Permafrost hydrology, Runoff, Precipitation (meteorology), Snowmelt, Glacier melting, Ground water, Rain, Mountains, China—Qinghai Plateau.

42-4099
Rational exploitation and utilization of ground water in permafrost region of the Mt. Da-Xinganling and Mt. Xiao-Xinganling, northeast China.
Zheng, Q., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.656-658, 4 refs.
Permafrost hydrology, Ground water, Water reserves, Mountains, Taliks, China—Da-Xinganling Mountain, China—Xiao-Xinganling Mountain.

42-4100
Groundwater protection in the permafrost zone.
Afanasenko, V.E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.659-660b, 5 refs.
Volkova, V.P.
Permafrost hydrology, Ground water, Hydrology, Protection, Water pollution.

42-4101
Minero-cryogenic processes.
Ahumada, A.L., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.661-665, 24 refs.
Active layer, Soil composition, Permafrost, Freeze thaw cycles, Minerals, Mountains, Sampling, Argentina—Andes.

42-4102
Upfreezing in sorted circles, western Spitsbergen.
Anderson, S.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.666-671, 33 refs.
Soil freezing, Rocks, Frost heave, Active layer, Freeze thaw cycles, Forecasting, Geomorphology, Freezeup, Sorting, Gravel, Norway—Spitsbergen.

42-4103
Tephras and sedimentology of frozen Alaskan loess.
Beget, J.E., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.672-677, 32 refs.
Loess, Ice wedges, Sediments, Geomorphology, Eolian soils, Paleoclimatology, Stratigraphy, United States—Alaska.

42-4104
Morphological features of the active rock glaciers in the Italian Alps and climatic correlations.
Belloni, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p 678-682b, 10 refs.
Pelfini, M., Smiraglia, C.
Rock glaciers, Geomorphology, Aerial surveys, Climatic factors, Mountains, Altitude, Air temperature, Italy—Alps.

42-4105
Observations on near-surface creep in permafrost, eastern Melville Island, Arctic Canada.
Bennett, L.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.683-688, 26 refs.
French, H.M.
Permafrost physics, Soil creep, Frozen ground mechanics, Permafrost thermal properties, Rheology, Ground ice, Active layer.

42-4106
Observations on an active lobate rock glacier, Slims River Valley, St. Elias Range, Canada.
Blumstengel, W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.689-694, 24 refs.
Harris, S.A.
Rock glaciers, Permafrost hydrology, Ice creep, Loess, Glacier flow, Forest land, Active layer, Frozen ground temperature, Canada—Yukon Territory—Slims River Valley.

42-4107
General moistening of the area and intensity of cryogenic processes.
Bosikov, N.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.695-699, 13 refs.
Geocryology, Thermokarst, Soil water, Permafrost distribution, Mapping.

42-4108
Thermokarst lakes at Mayo, Yukon Territory, Canada.
Burn, C.R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.700-705, 17 refs.
Smith, M.W.
Thermokarst lakes, Lacustrine deposits, Aerial surveys, Age determination, Taliks, Climatic changes, Geothermal prospecting.

42-4109
Loess and deep thermokarst basins in Arctic Alaska.
Carter, L.D., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.706-711, 23 refs.
Loess, Thermokarst, Ground ice, Distribution, Ice wedges, Stratigraphy, Radioactive age determination, United States—Alaska.

42-4110
First approach to the systematic study of the rock glaciers in the Italian Alps.
Carton, A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.712-717, 12 refs.
Dramis, F., Smiraglia, C.
Rock glaciers, Geomorphology, Distribution, Mountains, Aerial surveys, Altimetry, Climatic factors, Italy—Alps.

42-4111
Geocryology of the central Andes and rock glaciers.
Corte, A.E., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.718-723, 21 refs.
Geocryology, Rock glaciers, Permafrost distribution, Mountains, Talus.

42-4112
Rock glaciers in the source region of Urumqi River, middle Tian Shan, China.
Cui, Z., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.724-727, 14 refs.
Zhu, C.
Rock glaciers, Talus, Permafrost, Glacier flow, Alpine glaciation, Electromagnetic prospecting.

42-4113
Seasonal frost mounds in an eolian sand sheet near Søndre Strømfjord, W. Greenland.
Dijkmans, J.W.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.728-733, 17 refs.
Frost mounds, Eolian soils, Permafrost distribution, Sands, Hummocks, Seasonal variations, Sedimentation, Stratification, Ground ice, Greenland.

42-4114
Pingos in Alaska: a review.
Ferrians, O.J., Jr., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.734-739, 35 refs.
Pingos, Continuous permafrost, Frost mounds, Discontinous permafrost, Climatic factors, Geologic processes, Topographic effects.

42-4115
Regularities in forming the discontinuity of a cryogenic series.
Fotiev, S.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.740-743, 2 refs.
Discontinuous permafrost, Freeze thaw cycles, Geocryology, Pleistocene, Paleoclimatology, Taliks.

42-4116
Rock glacier rheology: a preliminary assessment.
Giardino, J.R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.744-748, 26 refs.
Vitek, J.D.
Rock glaciers, Glacier flow, Rheology, Basal sliding, Models, Ice mechanics, Ice creep, Ice deformation.

42-4117
Use of microbiological characteristics of rocks in geocryology.
Gilichinskiĭ, D.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.749-753, 11 refs.
Geocryology, Frozen rocks, Soil microbiology, Permafrost, Pleistocene, Paleoclimatology, Geomorphology, Sediments.

42-4118
Thermic of permafrost active layer—Spitsbergen.
Gluza, A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.754-758, 14 refs.
Repelewska-Pekalowa, J., Dabrowski, K.
Active layer, Permafrost, Geomorphology, Tundra, Meteorological factors, Plains, Shores, Soil water, Vegetation, Periglacial processes, Soil temperature, Norway—Spitsbergen.

42-4119
Soil formation paleogeographic aspects in Yakutiya.
Gubin, S.V., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.759-763, 7 refs.
Soil formation, Tundra, Active layer, Landscape development, Paleoclimatology, Pleistocene, USSR—Yakutia.

42-4120
Aerophotogrammetrical monitoring of rock glaciers.
Haeberli, W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.764-769, 14 refs.
Schmid, W.
Rock glaciers, Photogrammetric surveys, Permafrost, Glacier flow, Rheology, Periglacial processes, Aerial surveys, Discontinuous permafrost, Ground ice, Ice melting.

42-4121
Surface soil displacements in sorted circles, western Spitsbergen.
Hallet, B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.770-775, 31 refs.
Anderson, S.P., Stubbs, C.W., Gregory, E.C.
Active layer, Soil mechanics, Periglacial processes, Geomorphology, Frost heave, Soil water migration, Seasonal variations, Gravel, Sorting, Norway—Spitsbergen.

42-4122
Micromorphology and microfabrics of sorted circles, Jotunheimen, southern Norway.
Harris, C., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.776-783, 35 refs.
Cook, J.D.
Microstructure, Periglacial processes, Geomorphology, Active layer, Freeze thaw cycles, Microanalysis, Gravel, Clays, Sorting.

42-4123
Cryostratigraphic studies of permafrost, northwestern Canada.
Harry, D.G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.784-789, 31 refs.
French, H.M.
Permafrost, Geocryology, Ground ice, Stratigraphy, Paleoclimatology, History, Canada.

42-4124
Thaw lake sediments and sedimentary environments.
Hopkins, D.M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.790-795, 21 refs.
Kidd, J.G.
Lacustrine deposits, Ground thawing, Sediments, Geomorphology, Permafrost, Paleobotany, Vegetation, Ice melting, Lake ice.

42-4125
Periglacial soil structures in Spitsbergen and in central Europe.
Jahn, A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.796-800, 24 refs.
Permafrost structure, Periglacial processes, Active layer, Soil structure, Glaciation, Paleoclimatology, Norway—Spitsbergen.

42-4126
Continuous persistence of the permafrost zone during the Quaternary period.
Katasonov, E.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.801-804, 11 refs.
Continuous permafrost, Permafrost distribution, Freeze thaw cycles, Quaternary deposits, Cryogenic structures, Paleoclimatology.

42-4127
Problem of integral index stability of ground complex of permafrost.
Koval'kov, V.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.805-808, 7 refs.
Shvetsov, P.F.
Permafrost physics, Frozen ground mechanics, Stability, Soil temperature, Seasonal freeze thaw, Phase transformations, Soil water, Analysis (mathematics).

42-4128
Ice wedge growth in newly aggrading permafrost, western Arctic coast, Canada.
Mackay, J.R., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.809-814, 11 refs.
Ice wedges, Lake water, Ice growth, Continuous permafrost, Freeze thaw cycles, Ground ice, Ice formation, Drainage, Canada.

42-4129
Heat flow and peculiarities of cryolithozone in western Siberia.
Mel'nikov, V.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.815-818, 14 refs.
Deviatkin, V.N., Bevzenko, IU.P.
Permafrost heat transfer, Geocryology, Frozen ground mechanics, Frozen rocks, Geothermy, Seismic surveys, Heat flux, Taliks.

42-4130
Microtopographic thermal contrasts, northern Alaska.
Nelson, F.E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.819-823, 18 refs.
Frost mounds, Topographic features, Permafrost thermal properties, Microanalysis, Active layer, Freeze thaw cycles, Soil temperature.

42-4131
Frost mounds in Kaffiöyra and Hermansenöya, NW Spitsbergen, and their origin.
Niewiarowski, W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.824-829, 30 refs.
Sinkiewicz, M.
Frost mounds, Geomorphology, Continuous permafrost, Ground ice, Origin, Peat, Vegetation, Norway—Spitsbergen.

42-4132
Contemporary frost action on differently oriented rock walls: an example from the Swiss Jura Mountains.
Pancza, A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.830-833, 12 refs.
Ozouf, J.C.
Frost action, Frost shattering, Frozen rocks, Geomorphology, Mountains, Air temperature, Walls, Particle size distribution.

42-4133
Geocryogenic slope caves in the southern Cascades.
Pérez, F.L., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.834-839, 26 refs.
Geocryology, Caves, Frost shattering, Slopes, Talus, Periglacial processes, Soil creep, Geomorphology, United States—California.

42-4134
Traces of ice in caves: evidence of former permafrost.
Pissart, A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.840-845, 8 refs.
Van Vliet-Lanoë, B., Ek, C., Juvigne, E.
Ice surveys, Caves, Permafrost distribution, Paleoclimatology, Sedimentation, Quaternary deposits, Soil freezing.

42-4135
Theory of cryolithogenesis.
Popov, A.I., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.846-849.
Geocryology, Permafrost distribution, Permafrost structure, Theories, Origin, History, Ice formation, Ground ice, Lithology.

42-4136
Origin of massive ground ice on Tuktoyaktuk Peninsula, Northwest Territories, Canada: a review of stratigraphic and geomorphic evidence.
Rampton, V.N., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.850-855, 22 refs.
Ground ice, Geomorphology, Permafrost, Sediments, Origin, Stratigraphy, Oxygen isotopes, Ice lenses, Meltwater, Canada—Northwest Territories—Tuktoyaktuk Peninsula.

42-4137
Andes slope asymmetry due to gelifluction.
Regairaz, M.C., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.856-861, 34 refs.
Periglacial processes, Solifluction, Permafrost, Mountains, Climatic factors, Slope orientation, Soil erosion, Argentina—Andes.

42-4138
Development of depressed-centre ice-wedge polygons in the northernmost Ungava Peninsula, Quebec, Canada.
Seppälä, M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.862-866, 16 refs.
Gray, J., Richard, J.
Polygonal topography, Ice wedges, Active layer, Periglacial processes, Ice formation, Paleoclimatology, Radioactive age determination, Stratigraphy, Canada—Quebec—Ungava Peninsula.

42-4139
Upper horizon of permafrost soils.
Shur, IU.L., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.867-871, 4 refs.
Permafrost structure, Active layer, Geocryology, Thermokarst, Seasonal freeze thaw, Permafrost thickness.

42-4140
Frost shattering of rocks in the light of porosity.
Uusinoka, R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.872-875, 16 refs.
Nieminen, P.
Frost shattering, Frozen rocks, Frost resistance, Porosity, Frost weathering, Water content.

42-4141
Fluvio-aeolian interaction in a region of continuous permafrost.
Vandenberghe, J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.876-881, 19 refs.
Van Huissteden, J.
Continuous permafrost, Geocryology, Geomorphology, Cryoturbation, Periglacial processes, Climatic factors, Paleoclimatology, Sedimentation, Eolian soils, Ice wedges.

42-4142
Regularities of forming seasonally cryogenic ground.
Vtiurina, E.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.882-885, 9 refs.
Cryogenic soils, Permafrost, Seasonal freeze thaw, Seasonal variations, Soil classification.

42-4143
Observations of sorted circle activity, central Alaska.
Walters, J.C., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.886-891, 19 refs.
Patterned ground, Permafrost, Periglacial processes, Frozen ground mechanics, United States—Alaska.

42-4144
Patterned ground geologic controls, Mendoza, Argentina.
Wayne, W.J., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.892-896, 25 refs.
Patterned ground, Periglacial processes, Geomorphology, Permafrost, Mountains, Precipitation (meteorology), Wind factors, Paleoclimatology, Landforms, Argentina—Mendoza.

42-4145
Landslide motion in discontinuous permafrost.
Wilbur, S.C., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.897-902, 8 refs.
Beget, J.E.
Discontinuous permafrost, Landslides, Permafrost thermal properties, Seasonal variations, Soil mechanics, Permafrost distribution, Permafrost thickness, Climatic factors, United States—Alaska.

42-4146
Characteristics of cryoplanation landform in the interior area of Qinghai-Xizang Plateau.
Zhang, W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.903-905, 8 refs.
Shi, S., Chen, F., Xu, S.
Altiplanation, Geomorphology, Periglacial processes, Landforms, Mountains, Climatic factors, Origin, Pleistocene, China—Qinghai-Xizang Plateau.

42-4147
Prediction of permafrost energy stability.
Zhigarev, L.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.1. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.906-909, 6 refs.
Parmuzina, O.IU.
Permafrost thermal properties, Permafrost forecasting, Tundra, Heat flux, Thermal regime, Climatic factors, Snow cover effect, Vegetation factors.

42-4148
Borehole investigations of the electrical properties of frozen silt.
Arcone, S.A., et al, MP 2364, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.910-915, 16 refs.
Delaney, A.J.
Frozen ground physics, Electrical properties, Boreholes, Ground ice, Frozen ground temperature, Dielectric properties, Attenuation, Sediments, Water content.
The dielectric constant and attenuation rate of short radiowave pulses in frozen Fairbanks silt have been measured between boreholes 12 m deep and spaced between 4.4 and 17.6 m. The ranges for volumetric ice content and temperature were 44 to 79% and -6.0 (surface, early Apr.) to -0.7 C (bottom) respectively. The pulses lasted approximately 30 ns, had a power spectrum centered near 100 MHz, and were transmitted and received at the same depth. Dielectric constants were determined from the propagation time delay of the the leading edge and there was no significant dispersion. Attenuation rates (dB/m) were determined by comparing signal levels received between different borehole pairs and were adjusted for geometric spreading losses. Concurrent borehole dc resistivity measurements allowed estimates of the separate contributions of various loss mechanisms. The results show the dielectric constant to vary between 4.3 and 7.0 and to correlate well with the volumetric ice content, but not with temperature. Average attenuation rates at any particular depth varied between 1.4 and 4.0 dB/m. The lowest values occurred in the sections with the higher ice content. No more than 0.8 dB/m could be ascribed to conductive absorption losses, suggesting that scattering is an important loss mechanism.

42-4149
Permafrost and terrain preliminary monitoring results, Norman Wells pipeline, Canada.
Burgess, M.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.916-921, 17 refs.
Permafrost thermal properties, Underground pipelines, Frozen ground settling, Discontinuous permafrost, Ground thawing, Thermal regime, Monitors, Frozen ground temperature, Settlement (structural).

42-4150
Contribution to the study of the active layer in the area around Centrum Lake, north east Greenland.
Chiron, M., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.922-926, 3 refs.
Loubiert, J.F.
Active layer, Karst, Thaw depth, Seasonal freeze thaw, Wind factors, Freeze thaw cycles, Sounding, Greenland.

42-4151
Seasonal variations in resistivity and temperature in discontinuous permafrost.
Delaney, A.J., et al, MP 2365, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.927-932, 16 refs.
Sellmann, P.V., Arcone, S.A.
Discontinuous permafrost, Permafrost thermal properties, Electrical resistivity, Frozen ground physics, Boreholes, Sediments, Unfrozen water content, Grain size, Frozen ground temperature.
Electrical resistivity and temperature were measured in two 12.2-m-deep boreholes in interior Alaska in perennially frozen ice-rich silt and in coarse-grained alluvium. Seasonal temperature and resistivity changes were most noticeable in the upper 6 m at both sites, with resistivity varying more than several thousand ohm-m during the year. Resistivity profiles were compared with lithology, temperature and moisture content. At the alluvium site resistivity and grain size strongly correlated. Values ranging over 10,000 ohm-m occurred with coarse-grained material and values an order of magnitude lower occurred in the fine-grained material section. At the ice-rich silt site, resistivity values were generally lower, but in agreement with values for the fine-grained part of the alluvial section. Lithologic variations in the discontinuous permafrost zone can be as important as the high permafrost temperatures and correspondingly large unfrozen water contents in accounting for significant seasonal resistivity changes in fine-grained sediment.

42-4152
Permafrost conditions in the shore area at Svalbard.
Gregersen, O., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.933-936, 4 refs.
Eidsmoen, T.
Permafrost distribution, Geologic structures, Permafrost thermal properties, Shores, Thermistors, Climatic factors, Temperature distribution, Engineering, Norway—Svalbard.

42-4153
Core drilling through rock glacier-permafrost.
Haeberli, W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.937-942, 20 refs.
Permafrost, Rock glaciers, Talus, Periglacial processes, Drill core analysis, Glacier flow, Ice creep, Boreholes, Permafrost structure.

42-4154
Remote sensing lineament study in northwestern Alaska.
Huang, S.L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.943-948, 7 refs.
Lozano, N.
Continuous permafrost, Remote sensing, Geologic structures, Sediments, Topographic features, Minerals, LANDSAT, Mapping, United States—Alaska.

42-4155
Thermal evidence for an active layer on the seabottom of the Canadian Beaufort Sea shelf.
Hunter, J.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.949-954, 12 refs.
Active layer, Subsea permafrost, Permafrost thermal properties, Boreholes, Water temperature, Sea water, Seasonal variations, Engineering, Beaufort Sea.

42-4156
Foundation considerations for siting and designing the Red Dog Mine mill facilities on permafrost.
Krzewinski, T.G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.955-960, 4 refs.
Hammer, T.A., Booth, G.G.
Permafrost thermal properties, Geophysical surveys, Excavation, Mining, United States—Alaska.

42-4157
Electric prospecting of inhomogeneous frozen media.
Kuskov, V.V., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.961-964, 3 refs.
Permafrost physics, Frozen ground physics, Electromagnetic prospecting, Engineering, Analysis (mathematics), Sounding.

42-4158
Prediction of permafrost thickness by the "two point" method.
Kutasov, I.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.965-970, 15 refs.
Permafrost thickness, Permafrost forecasting, Permafrost thermal properties, Permafrost bases, Temperature distribution, Geothermy, Wells, Analysis (mathematics).

42-4159
Use of ground probing radar in the design and monitoring of water retaining embankments in permafrost.
LaFlèche, P.T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.971-976, 13 refs.
Judge, A.S., Pilon, J.A.
Permafrost hydrology, Water retention, Radar echoes, Embankments, Active layer, Design, Monitors, Seepage, Earth dams.

42-4160
Peat formation in Svalbard.
Låg, J., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.977-979, 9 refs.
Active layer, Peat, Permafrost thermal properties, Mosses, Slope orientation, Ground thawing, Norway—Svalbard.

42-4161
Permafrost geophysical investigation at the new airport site of Kangiqsualujjuaq, northern Quebec, Canada.
Seguin, M.K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.980-987, 29 refs.
Gahe, E., Allard, M., Ben-Mikoud, K.
Permafrost physics, Permafrost beneath structures, Geomorphology, Discontinuous permafrost, Airports, Active layer, Permafrost distribution, Ground water, Electrical resistivity, Seismic refraction, Electromagnetic prospecting.

42-4162
D.C. resistivity along the coast at Prudhoe Bay, Alaska.
Sellmann, P.V., et al, MP 2366, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.988-993, 11 refs.
Delaney, A.J., Arcone, S.A.
Subsea permafrost, Permafrost distribution, Tundra, Models, Permafrost physics, Shoreline modification, Electrical resistivity, Sounding, Shore erosion, United States—Alaska—Prudhoe Bay.
Electrical resistivity measurements, at three sites in Prudhoe Bay, Alaska, were made to provide an understanding of marine modification to coastal permafrost, and to evaluate D.C. resistivity techniques for coastal subsea permafrost studies. The measurements were made using Wenner electrical resistivity soundings. Profiles extended 2.8 km offshore and inland beyond the last signs of tundra modification by coastal processes. Offshore measurements were made with a floating cable, and inland measurements were made using driven electrodes. The observations indicate that the electrical properties of permafrost beneath the coastal bluff and adjacent tundra are rapidly modified by coastal erosion and periodic flooding during storms. Along one control line, apparent resistivity changes corresponded with the configuration of the top of ice-bonded permafrost observed by Baker (1987). Modeling supported by the control data permitted a close interpretation of the position of the top of ice-bounded subsea permafrost and provided a range of real resistivities for offshore materials.

42-4163
EM soundings for mapping complex geology in the permafrost terrain of northern Canada.
Sinha, A.K., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.994-999, 19 refs.
Permafrost thickness, Electromagnetic prospecting, Permafrost distribution, Geology, Sounding, Boreholes, Mapping, Canada—Northwest Territories—Mackenzie River Delta.

42-4164
Mapping and engineering-geologic evaluation of kurums.
Tiurin, A.I., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1000-1003.
Romanovskiĭ, N.N., Sergeev, D.O.
Rock streams, Permafrost, Geologic structures, Damage, Structures, Engineering, Mountains, Climatic factors, Slopes, Mapping.

42-4165
Development and thawing of ice-rich permafrost around chilled pipelines monitored by resistance gauges.
Van Everdingen, R.O., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1004-1007, 3 refs.
Carlson, L.E.
Permafrost, Underground pipelines, Ground thawing, Frost heave, Ground ice, Ice growth, Measuring instruments, Freeze thaw cycles, Soil freezing.

42-4166
Origin of patterned grounds in N.W. Svalbard.
Van Vliet-Lanoë, B., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1008-1013, 31 refs.
Patterned ground, Cryoturbation, Frost heave, Frozen ground mechanics, Origin, Drainage, Frost resistance, Periglacial processes, Ice lenses, Sediments, Norway—Svalbard.

42-4167
Statistical analysis on frost heave of soils in seasonally frozen ground area.
Wang, J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1014-1017.
Xie, Y.
Frost heave, Freezing indexes, Seasonal freeze thaw, Frozen ground mechanics, Ground water, Statistical analysis.

42-4168
Discontinuous permafrost mapping using the EM-31.
Washburn, D.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1018-1023, 7 refs.
Phukan, A.
Discontinuous permafrost, Permafrost distribution, Geophysical surveys, Mapping, Foundations, Permafrost beneath structures, Engineering.

42-4169
Discussion on maximum seasonal frost depth of ground.
Xu, R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1024-1025, 3 refs.
Pang, G., Wang, B.
Frost penetration, Frost heave, Loads (forces), Seasonal variations, Engineering.

42-4170
Principles for compiling an atlas of seasonal frost penetration, Jilin, China (1:2000000).
Zhang, X., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1026-1029, 4 refs.
Li, Y., Song, Z.
Frost penetration, Soil freezing, Seasonal freeze thaw, Soil water, Analysis (mathematics), Mapping, Design, Engineering, Snow cover effect.

42-4171
Segregation freezing observed in welded tuff by open system frost heave test.
Akagawa, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1030-1035, 12 refs.
Goto, S., Saito, A.
Frost heave, Ice lenses, Frozen rocks, Ice growth, Porous materials, Saturation, Cracking (fracturing), Tests, Water intakes, Weathering.

42-4172
Some aspects of soils engineering properties improvement during dam construction.
Biianov, G.F., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1036-1038, 3 refs.
Makarov, V.I., Kadkina, E.L.
Soil strength, Earth dams, Embankments, Permafrost, Solifluction, Engineering, Grain size, Water content, Clay soils.

42-4173
Frost heave forces on H and pipe foundation piles.
Buska, J.S., et al, MP 2367, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1039-1044, 6 refs.
Johnson, J.B.
Frost heave, Pile extraction, Pipeline supports, Shear stress, Loads (forces), Active layer, Adhesion, Foundations, Air temperature, Frozen ground temperature, United States—Alaska—Fairbanks.
The magnitude and variation of forces and shear stresses, caused by frost heaving in Fairbanks silt and the adfreeze effects of a surface ice layer and a gravel layer, were determined as a function of depth along the upper 2.75 m of a pipe pile and an H pile for three consecutive winter seasons (1982-1985). The peak frost heaving forces on the H pile during each winter were 752, 790 and 802 kN. Peak frost heaving forces on the pipe pile of 1118 and 1115 kN were determined only for the second and third winter seasons. Maximum average shear stresses acting on the pipe pile were 627 and 972 kPa for the second and third winter seasons. The surficial ice layer may have contributed 15 to 20% of the peak forces measured on the piles. The gravel layer on the H pile contributed about 35% of the peak forces measured.

42-4174
New freezing test for determining frost susceptibility.
Chamberlain, E.J., MP 2368, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1045-1050, 6 refs.
Frost resistance, Soil freezing, Pavements, Frost heave, Artificial freezing, Tests, Freeze thaw cycles, Temperature control, Equipment.
A new freezing test for determining the frost susceptibility of soils used in pavement systems is designed to supplant the standard CRREL freezing test. This new test cuts the time required to determine frost susceptibility in half. It also allows for the determination of both the frost heave and thaw weakening susceptibilities and considers the effects of freeze-thaw cycling. The new freezing test also eliminates much of the variability in test results by completely automating the temperature control and the data observations.

42-4175
Thaw settlement of frozen subsoils in seasonal frost regions.
Cheng, E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1051-1055, 3 refs.
Jiang, H.
Frozen ground settling, Thaw consolidation, Seasonal freeze thaw, Frozen ground temperature, Tests, Frost resistance, Damage, Structures, Loads (forces).

42-4176
Tensile adfreezing strength between soil and foundation.
Ding, J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1056-1059, 3 refs.
Lou, A., Yang, X.
Frozen ground strength, Adhesion, Foundations, Tensile properties, Frost heave, Shear strength, Tests, Bearing strength, Stability, Rheology.

42-4177
Interaction between a laterally loaded pile and frozen soil.
Domaschuk, L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1060-1065, 3 refs.
Fransson, L., Shields, D.H.
Frozen ground strength, Pile load tests, Soil creep, Ice strength, Sands, Loads (forces), Rheology, Time factor.

42-4178
Choice of parameters of impact breakage of frozen soils and rocks.
Fedulov, A.I., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1066-1070, 7 refs.
Labutin, V.N.
Frozen ground strength, Frozen rocks, Brittleness, Impact strength, Loads (forces), Coal, Mining, Excavation, Loading.

42-4179
Frost heave characteristics of saline soils and canal damage.
Feng, T., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1071-1077, 2 refs.
Frost heave, Saline soils, Channels (waterways), Antifreezes, Damage, Salinity, Frozen ground mechanics, Frost resistance, Soil chemistry.

42-4180
Mechanical properties of frozen saline clays.
Furuberg, T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1078-1084, 3 refs.
Berggren, A.-L.
Frozen ground mechanics, Saline soils, Clays, Soil creep, Salinity, Permafrost, Tests, Unfrozen water content, Temperature effects, Compressive properties.

42-4181
Decreased shear strength of a silty sand subjected to frost.
Gifford, G.P., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1085-1090, 7 refs.
Frozen ground strength, Thaw weakening, Shear strength, Frost heave, Freeze thaw cycles, Sands, Experimentation, Soil water migration, Ice lenses.

42-4182
Theoretical problems of cryogenic geosystem modelling.
Grechishchev, S.E., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1091-1095, 6 refs.
Geocryology, Permafrost forecasting, Thermodynamics, Mathematical models, Forecasting, Cryogenic soils.

42-4183
Use of geotextiles to mitigate frost heave in soils.
Henry, K., MP 2369, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1096-1101, 14 refs.
Frost heave, Frozen ground mechanics, Materials, Grain size, Water table, Countermeasures, Soil water migration, Capillarity, Porosity.
One potential use of geotextiles is horizontal placement in soil above the water table to act as a capillary break or barrier to mitigate frost heave. A capillary break works because larger pore sizes and/or wetting angles of the material than surrounding soil result in lower unsaturated hydraulic conductivity and lowered height of capillary rise of water. This reduces frost heave by limiting the rate of upward water migration. Five series of open-system, unidirectional frost-heave tests were run in which 3 nonwoven polypropylene geotextiles were tested for their ability to mitigate frost heave. Certain fabrics were successful in reducing frost heave by as much as 85%. Test results also indicate that the optimum fabric thickness required to mitigate frost heave is a function of soil type as well as properties of the geotextile.

42-4184
Volume of frozen ground strength testing.
Khrustalev, L.N., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1102-1105, 7 refs.
Pustovoit, G.P.
Tests, Frozen ground strength, Cost analysis, Permafrost physics, Analysis (mathematics), Engineering geology.

42-4185
Mechanical frozen rock-fill properties as soil structure.
Kronik, IA.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1106-1109, 3 refs.
Gavrilov, A.N., Shramkova, V.N.
Frozen ground strength, Frozen ground mechanics, Permafrost physics, Rheology, Materials, Rocks, Ice (construction material), Deformation, Analysis (mathematics).

42-4186
Study of frost heave in large u-shaped concrete canals.
Li, A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1110-1115, 3 refs.
Frost heave, Concrete structures, Frost penetration, Ground water, Channel stabilization, Loads (forces), Countermeasures, Engineering, Design, Deformation.

42-4187
Frost heaving force on the foundation of a heating building.
Liu, H., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1116-1120, 2 refs.
Frost heave, Loads (forces), Foundations, Buildings, Heating, Piles, Thaw depth, Frost penetration.

42-4188
Frost heave in saline-saturated fine-grained soils.
Lu, B.T.D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1121-1126, 14 refs.
Leonard, M.L., Mahar, L.
Frost heave, Saline soils, Water intakes, Saturation, Grain size, Temperature gradients, Stresses, Salinity, Ice lenses, Tests.

42-4189
Effect of variable thermal properties on freezing with an unfrozen water content.
Lunardini, V.J., MP 2370, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1127-1132, 17 refs.
Freezing points, Thermal conductivity, Unfrozen water content, Heat transfer, Permafrost thermal properties, Phase transformations, Temperature effects, Ground thawing, Analysis (mathematics).
While many materials undergo phase change at a fixed temperature, the variation of unfrozen water with temperature causes a soil system to freeze or thaw over a finite temperature range. Exact and approximate solutions are given for conduction phase change of plane layers of soil with unfrozen water contents that vary linearly and quadratically with temperature. The temperatures and phase change depths are found to vary significantly from those predicted for the constant temperature (Neumann) problem. The thermal conductivity and specific heat of the soil within the mushy zone varied as a function of unfrozen water content. The effect of specific heat is negligible and the effect of variable thermal conductivity can be accounted for by a proper choice of thermal properties used in the constant thermal property solution.

42-4190
Development and application practice of methods for preliminary thawing of permafrost soils in foundations.
Maksimenko, E.S., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1133-1136, 7 refs.
Ground thawing, Frozen ground strength, Permafrost beneath structures, Foundations, Buildings, Artificial thawing, Deformation, Countermeasures, Electric heating.

42-4191
Secondary creep interpretations of ice rich permafrost.
McRoberts, E.C., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1137-1142, 14 refs.
Permafrost hydrology, Soil creep, Ground ice, Frozen ground mechanics, Rheology, Temperature effects, Ice creep, Deformation, Tests.

42-4192
Phase relaxation of the water in frozen ground samples.
Mel'nikov, V.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1143-1146, 12 refs.
Podenko, L.S., Zavodovskiĭ, A.G.
Permafrost hydrology, Soil water, Ground ice, Relaxation (mechanics), Unfrozen water content, Temperature effects.

42-4193
Standard method for pile load tests in permafrost.
Neukirchner, R.J., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1147-1151, 13 refs.
Permafrost, Pile load tests, Mechanical properties, Loads (forces), Compressive properties, Forecasting, Engineering.

42-4194
Cryogenic heave under freezing of rocks.
Nevecherja, V.L., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1152-1155, 7 refs.
Frost heave, Frozen rocks, Freezing, Frost penetration, Seasonal variations, Permafrost.

42-4195
Effective life in creep of frozen soils.
Parameswaran, V.R., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1156-1159, 7 refs.
Frozen ground mechanics, Soil creep, Permafrost, Foundations, Bearing strength, Loads (forces), Shear strength, Piles.

42-4196
Horizontal frost heave force acting on the retaining wall in seasonal frozen regions.
Shui, T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1160-1164, 1 ref.
Na, W.
Frost heave, Loads (forces), Walls, Seasonal freeze thaw, Design.

42-4197
Dynamic load effect on settlement of model piles in frozen sand.
Stelzer, D.L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1165-1170, 6 refs.
Andersland, O.B.
Pile load tests, Frozen ground mechanics, Frozen ground settling, Soil creep, Sands, Rheology, Forecasting.

42-4198
Tangential frost-heaving force of the reinforced concrete pile and calculation of preventing it from pulling up due to frost heave.
Sun, Y., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1171-1174, 1 ref.
Frost heave, Loads (forces), Concrete piles, Pile extraction, Reinforced concretes, Countermeasures, Design, Friction.

42-4199
Behaviour of long piles in permafrost.
Theriault, A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1175-1180, 21 refs.
Ladanyi, B.
Permafrost, Piles, Stresses, Loads (forces), Frozen ground strength, Foundations, Compressive properties, Analysis (mathematics).

42-4200
Investigation on tangential frost heaving forces.
Tong, C., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1181-1185, 3 refs.
Yu, C., Sun, W.
Frost heave, Loads (forces), Foundations, Soil water, Soil composition, Freezing rate, Construction materials, Stresses, Water content.

42-4201
Stress-strain behaviour of frozen soils.
Vialov, S.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1186-1191, 10 refs.
Geocryology, Frozen ground mechanics, Stresses, Loads (forces), Strain tests, Rheology, Mathematical models, Engineering geology, Deformation, Compressive properties.

42-4202
Frost heaving forces on foundations in seasonally frozen ground.
Xu, S., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1192-1195, 1 ref.
Frost heave, Loads (forces), Foundations, Seasonal freeze thaw, Structures, Pressure, Distribution.

42-4203
On the distribution of frost heave with depth.
Zhu, Q., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1196-1199, 3 refs.
Frost heave, Frozen ground physics, Soil water migration, Distribution, Seasonal freeze thaw, Mathematical models, Frost penetration.

42-4204
Triaxial compressive strength of frozen soils under constant strain rates.
Zhu, Y., et al, MP 2371, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1200-1205b, 10 refs.
Carbee, D.L.
Frozen ground strength, Strain tests, Compressive properties, Frozen ground mechanics, Stresses, Sands, Deformation, Loads (forces), Shear strength.
Triaxial compressive strength tests were conducted on remolded, saturated Fairbanks silt and Northwest sand taken from Alaska under various constant strain rates ranging from 5.27/10,000,000 to 9.84/10,000/s and confining pressures up to 3.43 MPa at -2 C. The average dry density of the samples tested were 1.20 g/cu cm for silt and 1.52 g/cu cm for sand, respectively. It was found that, within the range of confining pressure employed, the maximum deviator stress for the silt did not vary.

42-4205
Long term settlement test (3 years) for concrete piles in permafrost.
Bredesen, B.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1206-1211, 5 refs.
Puschmann, O., Gregersen, O.
Permafrost structure, Piles, Settlement (structural), Reinforced concretes, Foundations, Bearing strength, Loads (forces), Compressive properties, Permafrost thermal properties.

42-4206
Tangential frost heaving force on reinforced concrete piles of highway bridge.
Dai, H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1212-1216, 3 refs.
Tian, D.
Frost heave, Bridges, Piles, Reinforced concretes, Loads (forces), Experimentation, Countermeasures, Frost penetration.

42-4207
Performance of two earthfill dams at Lupin, N.W.T.
Dufour, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1217-1222, 9 refs.
Holubec, I.
Earth dams, Permafrost thermal properties, Frozen ground temperature, Watersheds, Tailings, Ponds, Construction materials, Temperature effects, Seepage.

42-4208
Roadway embankments on warm permafrost, problems and remedial treatments.
Esch, D., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1223-1228, 17 refs.
Permafrost beneath roads, Embankments, Frozen ground mechanics, Ground thawing, Design, Forecasting, Temperature effects, Slopes, Solar radiation, Snow cover effect, Taliks, Countermeasures.

42-4209
Remedial solutions for pipeline thaw settlement.
Ferrell, J.E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1229-1234, 8 refs.
Thomas, H.P.
Frozen ground settling, Pipelines, Ground thawing, Soil freezing, Settlement (structural), Hot oil lines, Countermeasures, Thaw weakening.

42-4210
Frozen foundation above a technogenic talik.
Gur'ianov, I.E., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1235-1241, 7 refs.
Permafrost, Taliks, Pits (excavations), Ground thawing, Foundations, Buildings, Countermeasures, Climatic factors, Temperature regime.

42-4211
Assessment of key design aspects of a 150 foot high earth dam on warm permafrost.
Hammer, T.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1242-1246, 4 refs.
Krzewinski, T.G., Booth, G.G.
Earth dams, Permafrost beneath structures, Embankments, Permafrost thermal properties, Design, Tailings, Seepage, Countermeasures, Soil stabilization.

42-4212
Permafrost slope design for a buried oil pipeline.
Hanna, A.J., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1247-1252, 9 refs.
McRoberts, E.C.
Permafrost distribution, Underground pipelines, Slope stability, Ground thawing, Design, Topographic features, Discontinuous permafrost, Permafrost thickness, Countermeasures.

42-4213
Method for calculating the minimum buried depth of building foundations.
Jiang, H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1253-1255, 1 ref.
Cheng, E.
Permafrost beneath structures, Frost heave, Seasonal freeze thaw, Foundations, Deformation, Frost penetration, Countermeasures, Protection.

42-4214
Protection of warm permafrost using controlled subsidence at Nunapitchuk airport.
Johnson, E.G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1256-1261, 10 refs.
Bradley, G.P.
Permafrost thermal properties, Airports, Permafrost beneath structures, Permafrost preservation, Tundra, Protection, Frozen ground settling, Settlement (structural), Thaw weakening, Climatic factors, Embankments.

42-4215
Thermal performance of a shallow utilidor.
Kennedy, F.E., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1262-1267, 7 refs.
Phetteplace, G., Humiston, N., Prabhakar, V.
Permafrost thermal properties, Utilities, Frozen ground temperature, Ground thawing, Soil temperature, Microclimatology, Air temperature.

42-4216
Construction of hydros in cold climate: achievements and problems.
Kudoiarov, L.I., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1268-1270.
Krivonogova, N.F.
Permafrost beneath rivers, Electric power, Geocryology, Engineering geology, Freeze thaw cycles, Design, Temperature effects.

42-4217
Study of some geotechnical aspects effecting construction in glacial regions of Himalayas.
Lalji, D.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1271-1276, 19 refs.
Pathak, R.C.
Permafrost beneath structures, Pavements, Foundations, Cold weather construction, Precipitation (meteorology), Engineering, Mountains, Snow accumulation, Icing, Freeze thaw cycles, Geomorphology, Himalaya Mountains.

42-4218
Subgrade cooling and energy recovery system.
Long, E.L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway. Tapir Publishers, [1988], p.1277-1281, 8 refs.
Yarmak, E., Jr.
Frozen ground settling, Permafrost beneath structures, Ground thawing, Settlement (structural), Thermal insulation, Foundations, Countermeasures, Cooling systems.

42-4219
Long term plate load tests on marine clay in Svea, Svalbard.
Lunne, T., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1282-1287, 10 refs.
Eidsmoen, T.
Frozen ground mechanics, Loads (forces), Soil creep, Permafrost thermal properties, Rheology, Clays, Frozen ground temperature, Tests, Settlement (structural), Norway—Svalbard.

42-4220
Melioration of soils of cryolithozone.
Makeev, O.V., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1288-1291, 14 refs.
Cryogenic soils, Soil formation, Permafrost, Tundra, Thermokarst lakes, Freeze thaw cycles.

42-4221
Embankment failure from creep of permafrost foundation soils.
McHattie, R., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1292-1297, 1 ref.
Esch, D.
Permafrost beneath roads, Embankments, Seasonal freeze thaw, Soil creep, Permafrost thermal properties, Frozen ground mechanics, Ice lenses, Settlement (structural), Rheology.

42-4222
Construction of earth structures in permafrost areas by hydraulic methods.
Mel'nikov, P.I., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1298-1300, 4 refs.
Chang, R.V., Kuz'min, G.P., IAkovlev, A.V.
Permafrost, Earthwork, Hydraulic fill, Thermokarst, Tests, Freeze thaw cycles, Taliks, Lakes.

42-4223
Storage tank foundation design, Prudhoe Bay, Alaska, U.S.A.
Nidowicz, B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1301-1306, 9 refs.
Bruggers, D., Manikian, V.
Permafrost beneath structures, Storage tanks, Oil storage, Foundations, Thaw depth, Freeze thaw cycles, Design, Models, Settlement (structural), United States—Alaska—Prudhoe Bay.

42-4224
Studies of pipeline interaction with heaving soils.
Parmuzin, S.IU., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1307-1311, 7 refs.
Perel'miter, A.D., Naldenok, I.E.
Frost heave, Underground pipelines, Loads (forces), Stresses, Soil freezing, Frost resistance, Analysis (mathematics), Dynamic properties.

42-4225
Yukon River bank stabilization: a case study.
Riddle, C.H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1312-1317, 14 refs.
Rooney, J.W., Bredthauer, S.R.
Bank protection (waterways), Slope stability, Ground ice, Ground thawing, Soil erosion, Frozen ground strength, Design, Countermeasures, United States—Alaska—Yukon River.

42-4226
Airport runway deformation at Nome, Alaska.
Rooney, J.W., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1318-1323, 8 refs.
Nixon, J.F., Riddle, C.H., Johnson, E.G.
Runways, Frozen ground settling, Permafrost beneath roads, Airports, Frost heave, Deformation, Permafrost thermal properties, Subsurface drainage, Construction materials, Ground thawing, Design, United States—Alaska—Nome.

42-4227
Physical model study of Arctic pipeline settlement.
Vinson, T.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1324-1329, 10 refs.
Palmer, A.C.
Subsea permafrost, Pipelines, Settlement (structural), Loads (forces), Ground thawing, Offshore structures, Permafrost thermal properties, Deformation, Tests.

42-4228
Bethel Airport CTB pavement performance analysis.
Vita, C.L., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1330-1335, 9 refs.
Rooney, J.W., Vinson, T.S.
Permafrost beneath roads, Pavements, Aircraft landing areas, Permafrost preservation, Runways, Construction materials, Design, Airports, United States—Alaska—Bethel.

42-4229
New method for pile testing and design in permanently-frozen grounds.
Vialov, S.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1336-1340, 9 refs.
Mirenburg, IU.S.
Permafrost physics, Pile load tests, Foundations, Settlement (structural), Bearing strength, Tests, Design, Forecasting, Analysis (mathematics), Dynamometers.

42-4230
Classification of frozen heave of ground for hydraulic engineering in seasonal frozen regions.
Xie, Y., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1341-1345, 5 refs.
Wang, J., Yian, W.
Frost heave, Seasonal freeze thaw, Frost resistance, Engineering, Mountains, Statistical analysis, Density (mass/volume), Freezing indexes, Ground water, Classifications.

42-4231
Retaining wall with anchor slabs using in cold region.
Xu, B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1346-1351, 5 refs.
Li, C.
Frost heave, Loads (forces), Walls, Seasonal freeze thaw, Pressure, Water table, Damage, Countermeasures, Experimentation, Ground water.

42-4232
Thaw stabilization of roadway embankments.
Zarling, J.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1352-1357, 5 refs.
Braley, W.A., Esch, D.C.
Permafrost beneath roads, Soil stabilization, Thaw weakening, Embankments, Snow cover effect, Permafrost thermal properties, Countermeasures, Thermal regime.

42-4233
Method for calculating frost heave reaction force in seasonal frost region.
Zhou, Y., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1358-1362, 5 refs.
Frost heave, Loads (forces), Pile structures, Stresses, Foundations, Frost penetration, Analysis (mathematics), Tests.

42-4234
Cold-mix asphalt curing at low temperatures.
Beaty, A.N.S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1363-1367, 11 refs.
Jarrett, P.M.
Bitumens, Permafrost beneath roads, Pavements, Cold weather construction, Concrete curing, Tests, Concrete strength, Air temperature.

42-4235
Prognosis of soil temperature at the area under construction.
Chekhovskiĭ, A.L., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1368-1371, 5 refs.
Permafrost thermal properties, Cold weather construction, Thermal regime, Frozen ground temperature, Heat sources, Soil temperature, Analysis (mathematics), Thermal conductivity, Design.

42-4236
Pressure in relation to freezing of water-containing masses in a confined space.
Dubina, M.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1372-1376, 5 refs.
Ice formation, Freezing, Stresses, Phase transformations, Analysis (mathematics), Pressure.

42-4237
Environment protection for mining enterprises in permafrost regions.
Eichaninov, E.A., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1377-1381, 4 refs.
Permafrost preservation, Environmental protection, Mining, Ground thawing, Air pollution, Tailings, Waste disposal.

42-4238
Arctic mining in permafrost.
Giegerich, H.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1382-1387.
Permafrost preservation, Mining, Frozen ground strength, Engineering, Artificial freezing, Soil stabilization, Design criteria, Ground thawing, Countermeasures.

42-4239
Applied study of preventing structures from frost damage by using dynamic consolidation.
Han, H., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1388-1392, 1 ref.
Guo, M.
Frost heave, Structures, Soil compaction, Frost resistance, Damage, Countermeasures, Permafrost beneath structures, Water table, Ground water, Permeability.

42-4240
Effect of heating on frost depth beneath foundations of building.
Hong, Y., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1393-1396, 1 ref.
Jiang, H.
Permafrost beneath structures, Frost penetration, Heating, Buildings, Design, Surface properties.

42-4241
Prediction of permafrost thawing around mine workings.
Izakson, V.IU., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1397-1402, 3 refs.
Petrov, E.E., Samokhin, A.V.
Permafrost thermal properties, Ground thawing, Mine shafts, Thaw depth, Forecasting, Thermal regime, Thermal insulation.

42-4242
Experience in construction by stabilization method.
Khrustalev, L.N., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1403-1406, 2 refs.
Nikiforov, V.V.
Permafrost beneath structures, Soil stabilization, Permafrost preservation, Foundations, Cooling systems, Settlement (structural), Countermeasures.

42-4243
Geocryological studies for railway construction (state, primary tasks).
Kondrat'ev, V.G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1407-1412, 18 refs.
Railroad tracks, Icing, Geocryology, Permafrost beneath roads, Permafrost hydrology, Countermeasures, Permafrost thickness, Climatic factors, Seasonal freeze thaw.

42-4244
Ventilated surface foundations on permafrost soils.
Kutvitskaia, N.B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1413-1416, 5 refs.
Gokhman, M.R.
Permafrost beneath structures, Permafrost preservation, Ventilation, Design, Engineering, Buildings, Bearing strength, Thermal regime.

42-4245
Results of researches and experience of hydraulic mining of frozen rocks.
Lavrov, N.P., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1417-1421, 4 refs.
Perl'shtein, G.Z., Samyshin, V.K.
Frozen ground strength, Mining, Permafrost, Hydraulics, Sediments, Soil water, Ground thawing, Analysis (mathematics), Water temperature, Heat flux, Frozen rocks.

42-4246
Offshore Seawater Treating Plant for Waterflood Project, Prudhoe Bay oil field, Alaska, U.S.A.
Manikian, V., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1422-1425, 2 refs.
Machemehl, J.L.
Ice loads, Offshore structures, Water treatment, Oil recovery, Sea water, Design, Engineering, Protection, Water pressure, United States—Alaska—Prudhoe Bay.

42-4247
Developing a thawing model for sludge freezing beds.
Martel, C.J., MP 2372, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1426-1430, 7 refs.
Sludges, Thaw depth, Freeze thaw cycles, Waste treatment, Water treatment, Mathematical models, Forecasting, Drying, Freezing.
This paper presents the development of a model that can be used to predict the thawing design depth of a sludge freezing bed. A sludge freezing bed is a new unit operation for dewatering sludges from water and wastewater treatment plants. Preliminary results obtained from a pilot-scale freezing bed indicate that this model is valid.

42-4248
Test of the shallowly buried water supply pipe.
Meng, F., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1431-1434.
Underground pipelines, Water pipes, Cold weather construction, Engineering, Tests, Soil temperature, Frost action, Damage.

42-4249
Rock mechanics related to coal mining in permafrost on Spitsbergen.
Myrvang, A.M., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1435-1440, 3 refs.
Permafrost, Mining, Rock mechanics, Design, Freeze thaw cycles, Stresses, Tests, Norway—Spitsbergen.

42-4250
Settlements of the foundations on seasonally freezing soils.
Orlov, V.O., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1441-1445.
Fursov, V.V.
Settlement (structural), Foundations, Frost heave, Seasonal freeze thaw, Freeze thaw cycles.

42-4251
Regularities of thermal and mechanical interaction between culverts and embankments.
Perctrukhin, N.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1446-1449, 8 refs.
Topekha, A.A.
Permafrost thermal properties, Culverts, Embankments, Frost penetration, Frost heave, Soil freezing, Railroad tracks, Deformation, Soil temperature, Design, Thermal regime.

42-4252
Methods of quantitative valuation of regional heat resources for preparation of permafrost placer deposits to mining.
Perl'shtein, G.Z., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1450-1453, 11 refs.
Kapranov, V.E.
Permafrost thermal properties, Heat sources, Water temperature, Ground thawing, Frozen ground strength, Placer mining, Excavation, Analysis (mathematics), Climatic factors.

42-4253
Stability of road subgrades in the north of west Siberia.
Polunovskiĭ, A.G., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1454-1458.
L'vovich, IU.M.
Soil stabilization, Subgrade soils, Permafrost beneath roads, Cold weather construction, Thermal insulation, Design, Materials.

42-4254
Reflection seismic exploration and data processing in cold regions.
Porturas, F., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1459-1465, 9 refs.
Permafrost thickness, Seismic surveys, Data processing, Wave propagation, Seismic reflection, Boundary layer, Attenuation.

42-4255
Problems of arctic road construction and maintenance in Finland.
Saarelainen, S., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1466-1471, 12 refs.
Vaskelainen, J.
Cold weather construction, Road maintenance, Permafrost beneath roads, Frost heave, Road icing, Snow accumulation, Design, Thermodynamics, Embankments, Finland.

42-4256
Some aspects of freezing the ice platforms.
Savel'ev, B.A., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1472-1475, 9 refs.
Latalin, D.A.
Ice islands, Ice formation, Artificial ice, Floating ice, Platforms, Freezing, Analysis (mathematics), Temperature effects.

42-4257
Slope stability in arctic coal mines.
Sinha, A.K., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1476-1481, 10 refs.
Sengupta, M., Kinney, T.C.
Slope stability, Permafrost, Mines (excavations), Thermal conductivity, Thermal insulation, Ground thawing, Countermeasures.

42-4258
Resistance to frost heave of various concrete canal lining.
Song, B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1482-1487.
Fan, X., Sun, K.
Frost heave, Frost resistance, Concrete structures, Seasonal freeze thaw, Linings, Channels, Damage, Countermeasures, Frost penetration, Water content.

42-4259
Barrow direct bury utilities system design.
Thomas, J.E., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1488-1493, 4 refs.
Utilities, Underground pipelines, Excavation, Design, Engineering.

42-4260
Cold cracking of asphalt pavement on highway.
Tian, D., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1494-1499, 2 refs.
Dai, H.
Bitumens, Pavements, Permafrost beneath roads, Cracking (fracturing), Countermeasures, Construction materials, Design, Climatic factors.

42-4261
Airport network and housing construction programmes in northern Quebec, Canada.
Tremblay, C., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1500-1506, 8 refs.
Doré, G.
Permafrost beneath structures, Cold weather construction, Frost heave, Airports, Continuous permafrost, Engineering, Thaw depth, Settlement (structural), Slope stability, Countermeasures.

42-4262
Frost damage of enclosure and its measure for preventing frost hazard.
Wang, G., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1507-1510, 1 ref.
Permafrost beneath structures, Cracking (fracturing), Frost action, Frost heave, Damage, Countermeasures, Analysis (mathematics), Seasonal freeze thaw, Foundations, Ground thawing.

42-4263
Application of lime stabilization on highway permafrost region, Qinghai-Xizang Plateau.
Wang, Q., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1511-1514, 2 refs.
Wu, J., Liu, J.
Permafrost beneath roads, Subgrade soils, Linings, Soil stabilization, Frozen ground strength, Chemical composition, Frost resistance, Freeze thaw cycles.

42-4264
Investigation and treatment for slope-sliding of railway cutting in permafrost area.
Wang, W., International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1515-1519.
Permafrost beneath roads, Slope stability, Engineering geology, Roadbeds, Sliding, Damage, Countermeasures, Seepage, Dredging, Thermal effects.

42-4265
Model test to determine thawing depth of embankment in permafrost region.
Ye, B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1520-1525, 1 ref.
Tong, Z., Lou, A., Shang, J.
Permafrost beneath roads, Embankments, Subgrades, Ground thawing, Models, Thaw depth, Analysis (mathematics), Tests, Temperature distribution.

42-4266
Studies on the plastic-film-enclosed foundation of sluice gates and its application.
Yu, B., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1526-1530, 2 refs.
Qu, X., Jin, N.
Sluices (hydraulic engineering), Frost heave, Plastics, Cold weather construction, Foundations, Countermeasures, Materials, Design.

42-4267
Geocryological block of oil and gas producing and transporting geotechnical systems.
Zakharov, Y.F., et al, International Conference on Permafrost, 5th, Trondheim, Norway, Aug. 2-5, 1988. Proceedings, Vol.2. Edited by K. Senneset, Trondheim, Norway, Tapir Publishers, [1988], p.1531-1533, 6 refs.
Podbornyĭ, E.E., Pushko, G.I.
Permafrost preservation, Engineering geology, Pipelines, Geocryology, Thermal effects, Design, Hydrocarbons, Active layer, Permafrost control.

42-4268
Oceanic regimes at the ice fronts of George VI Sound, Antarctic Peninsula.
Potter, J.R., et al, *Continental shelf research*, Apr. 1988, 8(4), p.347-362, 15 refs.
Talbot, M.H., Paren, J.G.
Ice shelves, Ice models, Ice melting, Antarctica—George VI Sound, Antarctica—George VI Ice Shelf.
The basal melting of George VI Ice Shelf into the unusually warm underlying water represents a major oceanographic feature in the waters off the west coast of the Antarctic Peninsula. A synoptic dataset from the northern ice front has been obtained by a continuously measuring CTD probe. The cross-sectional profiles prepared from these data support the suggested model and show that the circulation can account for two thirds of the basal melt required for mass balance of the ice shelf. Further measurements, with the profiling CTD instrument, with sample bottles and reversing thermometers, and with an Aanderaa RCM4 current meter, have extended coverage to the southern ice front. The oceanographic regime there is similar to that in the north below 500 m and it appears that communication occurs between the northern and southern regions at this depth. Clear evidence of basal melting is observed in the T-S characteristics at the southern ice front but the waters of the region are not described by a unique T-S curve as they are in the north. More detailed investigation of the southern area is required before estimates of the actual melt rates for the entire ice shelf will be possible. (Auth. mod.)

42-4269
United States Antarctic Research Program in the western Ross Sea, 1979-1980: the sediment descriptions.
Kaharoeddin, F.A., et al, *Florida State University. Sedimentology Research Laboratory. Contribution*, Apr. 1988, No.53, 230p., Refs. p.225-228.
Drill core analysis, Bottom sediment, Antarctica—Ross Sea.
This volume is a presentation of the descriptions of sediments obtained by coring and grab-sampling during the 1979-1980 austral summer cruise of the U.S. Coast Guard icebreaker, *Glacier*, in the western Ross Sea adjacent to the continental margin of Antarctica, and it is the fifth in a series concerned with the descriptions of sedimments collected since 1968 by this vessel. The intended purpose of the volume is to serve as a guide to sampling of the sediments by researchers wishing to pursue further, more detailed studies. The data presented herein include: a brief summary of the scientific objectives of the cruise, together with a discussion of core and grab sample recovery, shipment, and handling; a table and maps of station location data for materials retrieved; an explanation of the laboratory procedures and descriptive criteria used in the description of the sediments; lithologic descriptions of the piston and trigger cores, the piston and trigger core bagged samples, and the bagged grab samples, and information concerning age-dates of the piston cores and selected grab samples. (Auth. mod.)

42-4270
Remote sensing studies of Siberia. [Distantsionnye issledovaniia Sibiri],
Vorob'ev, V.V., et al, Novisbirsk, Nauka, 1988, 161p., In Russian with abridged English table of contents enclosed. Refs. p117-160.
IAnshin, A.L., ed, Solov'ev, V.A., ed.
Spaceborne photography, Aerial surveys, Mapping, Charts, Photointerpretation, Geomorphology, Topography, Landscape types, Slope processes, Soils.

42-4271
Aerial and satellite surveys of natural resources in Siberia. [Aerokosmicheskie issledovaniia prirodnykh resursov Sibiri],
Ziat'kova, L.K., et al, Novosibirsk, Nauka, 1988, 166p., In Russian with abridged English table of contents enclosed. Refs. p.132-165.
IAnshin, A.L., ed, Solov'ev, V.A., ed.
Aerial surveys, Spaceborne photography, Photointerpretation, Remote sensing, Geobotanical interpretation, Landscape types, Permafrost distribution, Mapping, Economic development, Arctic landscapes, Alpine landscapes.

42-4272
Automated processing of images of natural associations in Siberia. [Avtomatizirovannaia obrabotka izobrazheniĭ prirodnykh kompleksov Sibiri],
Alekseev, A.S., et al, Novosibirsk, Nauka, 1988, 223p., In Russian with abridged English table of contents enclosed. Refs. p.137-172.
IAnshin, A.L., ed, Solov'ev, V.A., ed.
Spaceborne photography, Photointerpretation, Remote sensing, Data processing, Computer applications.

42-4273
Arctic research of the United States, Vol.2.
Interagency Arctic Research Policy Committee, MP 2379, Washington, D.C., Spring 1988, 76p., For selected papers see 42-4274 through 42-4276.
Brown, J., ed, Cate, D., ed, Bowen, S.L., ed, Valliere, D.R., ed.
Research projects, Polar regions, Data processing, Meetings.
The articles in this first issue of 1988 are divided into three main sections. The first focuses on non-Federal research in Alaska and selected Federal support activities involving data and information acquisition, storage and dissemination. The second section presents reports on meetings and activities of international interest predominantly originating outside the U.S. The third section contains brief reports of other Arctic research activities, primarily in the U.S. Reports of meetings of the Arctic Research Commission and the Interagency Committee and notices of upcoming meetings are a regular feature of the journal.

42-4274
Alaska SAR facility: an update.
Weller, G., et al, *Arctic research of the United States*, Spring 1988, Vol.2, MP 2380, p.27-31, 5 refs.
Weeks, W.F.
Data processing, Sea ice, Radar echoes.

42-4275
World Data Center-A for Glaciology: National Snow and Ice Data Center.
Barry, R.G., et al, *Arctic research of the United States*, Spring 1988, Vol.2, p.32-38, 11 refs.
Brennan, A.M.
Data processing, Sea ice.

42-4276
Arctic air chemistry.
Schnell, R.C., *Arctic research of the United States*, Spring 1988, Vol.2, p.39-41.
Atmospheric composition, Air pollution, Polar regions.

42-4277
Kiwi 131; an antarctic field experiment to study strains and acoustic emission generated by loads moving over sea ice.
Squire, V.A., et al, May 1986, 33p., Unpublished report. 30 refs.
Langhorne, P.J., Robinson, W.H., Heine, A.J.
Sea ice, Strain tests, Ice physics, Loads (forces), Antarctica—McMurdo Sound.
After an introductory description of basic sea ice characteristics, problems of moving loads on ice and previous work on acoustic emission, details are given of experiments carried out on flat, snow-free, shore-fast ice in McMurdo Sound on an ice road 6 km long. The discussion includes location and layout of experimental site, physical characteristics of the ice in the area, gauges used to measure surface strains and sensors used to monitor acoustic activity, data processing, sample results and theory. The moving loads used were an extended cab Ford pickup of 50,000 kg approximate weight. Plans for completion of the analysis of the Kiwi 131 dataset are outlined.

42-4278
Meteorological studies carried out during the period Feb. 1985 to Feb. 1986.
Lal, B., Report of the 2nd Indian wintering team in Antarctica (1985-86), New Delhi, Department of Ocean Development, 1987, p.10-21.
Weather observations, Snowfall, Antarctica—Dakshin Gangotri Station.
Meteorological data collected at Dakshin Gangotri Station is presented, with tables showing monthly and seasonal variations of atmospheric temperature and pressure, wind speed, number and duration of blizzards, and daily number of sunshine hours.

42-4279
Analytical results and sample locality map of stream-sediment, moraine-sediment, and heavy-mineral-concentrate samples from the Anchorage quadrangle, South-Central Alaska.
Arbogast, B., et al, *U.S. Geological Survey. Open-file report,* 1987, 87-151, 175p. + map, 9 refs.
Madden, D., Hoffman, J.D., O'Leary, R.M.
Glacial deposits, Moraines, Sediment transport, Minerals, Chemical composition, Streams, Geochemistry, Sampling, Erosion, United States—Alaska—Anchorage.

42-4280
Debris flows/avalanches: process, recognition, and mitigation.
Costa, J.E., ed, *Reviews in engineering geology,* 1987, Vol.7, 239p., Refs. passim.
Wieczorek, G.F., ed.
Mudflows, Talus, Landslides, Rheology, Mountains, Rain, Countermeasures.

42-4281
Climate, history, periodicity, and predictability.
Rampino, M.R., ed, New York, Van Nostrand Reinhold Co., 1987, 588p., Refs. passim.
Sanders, J.E., ed, Newman, W.S., ed, Konigsson, L.K., ed.
Climatic changes, Sea level, Solar activity, Forecasting, Paleoclimatology.

42-4282
Construction on permafrost.
Thomas, D.H., *Northern engineer,* Fall/winter 1987, 19(3-4), p.4-7.
Pile structures, Foundations, Permafrost bases.

42-4283
Ground freezing and frost heave: a review.
Nixon, J.F., *Northern engineer,* Fall/winter 1987, 19(3-4), p.8-18, For another source see 42-1689. 51 refs.
Frost penetration, Soil freezing, Frost heave, Models.

42-4284
Frazil ice in rivers and streams.
Daly, S.F., *Northern engineer,* Fall/winter 1987, 19(3-4), MP 2381, p.19-26, For another source see 42-1690. 34 refs.
Frazil ice, Supercooling, Laboratory techniques.

42-4285
Heat loss in multi-story buildings due to open windows.
Oelfke, S., *Northern engineer,* Fall/winter 1987, 19(3-4), p.27-34, 8 refs.
Windows, Heat loss, Indoor climates, Heating.

42-4286
Use of wood fiber in lightweight embankments for northern applications.
McMahon, R.J., *Northern engineer,* Fall/winter 1987, 19(3-4), p.35-39, 6 refs.
Embankments, Wood, Permafrost bases.

42-4287
Photoadaptive strategies in sea-ice microalgae.
Barlow, R.G., et al, *Marine ecology progress series,* June 1988, 45(1-2), p.145-152, 45 refs.
Algae, Ice edge, Cryobiology, Photosynthesis.

42-4288
Abrupt climatic change: evidence and implications.
Berger, W.H., ed, *North Atlantic Treaty Organization. ASI Service C: Mathematical and Physical sciences,* 1987, Vol.216, NATO Advanced Research Workshop on Abrupt Climatic Change—Evidence and Implications, St. Hugues de Biviers, France, Oct. 16-22, 1985. Proceedings, 425p., Refs. passim. For selected papers see 42-4289 through 42-4297 or I-37993 through I-37995.
Labeyrie, L.D., ed.
Climatic changes, Paleoclimatology, Glaciation, Ice cores, Oxygen isotopes, Paleoecology, Pleistocene, Meetings, Bottom sediment.
The major topic of the conference is the last glacial-interglacial transition. The evidences for rapid climatic fluctuations in the Arctic and Antarctic are presented.

42-4289
Evidence of abrupt climatic change during the last 1,500 years recorded in ice cores from the tropical Queleccaya ice cap, Peru.
Thompson, L.G., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.99-110, 15 refs.
Mosley-Thompson, E.
Climatic changes, Ice cores, Paleoclimatology, Glacial deposits, Ice sheets, Oxygen isotopes, Mountains, Particles, Peru.

42-4290
Ice core evidence of abrupt climatic changes.
Dansgaard, W., *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.223-233, Refs. p.230-233.
Climatic changes, Ice cores, Oxygen isotopes, Glaciation, Atmospheric composition, Snow cover, Paleoclimatology, Greenland, Antarctica—Vostok Station, Antarctica—Byrd Station, Antarctica—Dome C.
Profiles of oxygen isotopes along five deep ice cores including Dome C, Byrd and Vostok stations, Antarctica are compared. The two Greenland profiles reveal many abrupt climatic changes in the North Atlantic Ocean during the Wisconsin glaciation. Dust and trace element concentrations show radical environmental changes. The targets of future deep ice core drilling are discussed. (Auth. mod.)

42-4291
Abrupt climatic changes: the antarctic ice record during the late Pleistocene.
Jouzel, J., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.235-245, Refs. p.243-245.
Lorius, C., Merlivat, L., Petit, J.R.
Climatic changes, Ice cores, Glaciation, Paleoclimatology, Pleistocene, Antarctica—Byrd Station, Antarctica—Dome C.
Records of oxygen isotopes from Antarctic (Dome C and Byrd) ice cores allow us to investigate the possible existence of abrupt climatic changes as revealed by Greenland ice cores in the 40 to 10 ky BP time period. At the decade to century time-scale there is no firm conclusion about the presence of rapid climatic changes since seasonal oscillation is not completely averaged out. At the century to millennium time-scale there are characteristic features of rapid warmings and cooling during the Last Glacial Maximum with a rate of temperature change of about 3 deg C/ka. This rate is similar to the one observed during the last deglaciation. During this period a significant reversal of the temperature trend is observed (as already noted for Greenland ice cores) and discussed. (Auth.)

42-4292
Environmental changes during last deglaciation inferred from chemical analysis of the Dome C ice core.
Legrand, M., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.247-259, 14 refs.
Delmas, R.J.
Climatic changes, Glaciation, Ice cores, Ice composition, Chemical analysis, Ice sheets, Antarctica—Dome C.
The global environmental changes inferred from the glaciochemical study of the Dome C ice core (Antarctica) for the last climatic transition 15-11 Ka BP are reported in detail. The methods and the calculation for interpreting the data are explained. It is confirmed that the most significant changes in the deposition of aluminum and sodium occurred during the first stage of the transition, i.e. in about 2 Ka. The ratio Cl/Na varied considerably when passing from the Last Glacial Maximum to the Holocene, most probably in relation with the stability of the atmosphere. Major changes occurred also for the origin and composition of sulfate and nitrate contributions. Since the beginning of the Holocene, the acid forms (H_2SO_4 and HNO_3) have been predominant for both anions contrary for what is observed for the glacial age. (Auth.)

42-4293
Bioturbation effects on abrupt climtic changes recorded in deep sea sediments. Correlation between *delta* (18)O profiles and accelerator (14)C dating.
Bard, E., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.263-278, 19 refs.
Climatic changes, Bottom sediment, Ocean bottom, Ice volume, Quaternary deposits, Oxygen isotopes, Radioactive age determination, Pleistocene, Paleoclimatology, Paleoecology.

42-4294
Glacial-Holocene transition: climate pulsations and sporadic shutdown of NADW production.
Berger, W.H., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.279-297, Refs. p.293-297.
Burke, S., Vincent, E.
Climatic changes, Glaciation, Bottom sediment, Ice cores, Meltwater, Paleoclimatology, Paleoecology, Albedo, Carbon dioxide, Heat flux.

42-4295
Paleoproductivity of oceanic upwelling and the effect on atmospheric CO2 and climatic change during deglaciation times.
Sarnthein, M., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.311-337, Refs. p.331-334.
Winn, K., Zahn, R.
Upwelling, Climatic changes, Ice volume, Paleoclimatology, Paleoecology, Biomass, Carbon dioxide, Ice cores.

42-4296
Climate sensitivity and past climates: evidence from numerical studies.
Mitchell, J.F.B., *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.383-397, 28 refs.
Climatic changes, Paleoclimatology, Snow cover effect, Ice cover effect, Sea ice, Models, Cloud cover, Water vapor, Carbon dioxide.

42-4297
Climate model intercomparison for the Younger Dryas and its implications for paleoclimatic data collection.
Schneider, S.H., et al, *North Atlantic Treaty Organization. ASI Series C: Mathematical and Physical Sciences,* 1987, Vol.216, p.399-417, 28 refs.
Peteet, D.M., North, G.R.
Climatic changes, Paleoclimatology, Glaciology, Meltwater, Sea ice distribution, Pleistocene, Models.

42-4298
Sediment source and discharge variability in a small subarctic nival catchment.
Threlfall, J.L., West Yorkshire, United Kingdom, (1988), 337p., Ph.D. thesis. Refs. p.317-337.
Permafrost hydrology, Sediments, Snowmelt, River flow, Sediment transport, Drainage, Snow cover effect, Electrical resistivity, Ground thawing, Snow hydrology, Ice conditions, Climatic factors.

42-4299
Thermal regime of overland pipelines in freezing weather. [Teplovoĭ rezhim nadzemnykh truboprovodov v zimnikh usloviiakh],
Nasupbekova, D.A., Alma-Ata, Nauka, 1988, 187p., In Russian with abridged English table of contents enclosed. 155 refs.
Electric power, Meteorological data, Hydraulic structures, Water pipelines, Waste disposal, Pipe flow, Thermal regime, Wind factors, Pipeline freezing, Air temperature.

42-4300
Aerial and satellite methods in engineering geodynamics. [Aerokosmicheskie metody v inzhenernoĭ geodinamike],
Sadov, A.V., Moscow, Nedra, 1988, 207p. (Pertinent p.153-171), In Russian. 50 refs.
Taiga, Mining, Railroads, Forest tundra, Swamps, Baykal Amur railroad, Slope processes, Hydrology.

42-4301
Simulation-modeling of ships' power plants. [Imitatsionnoe modelirovanie sudovykh energeticheskikh ustanovok],
Shostak, V.P., et al, Leningrad, Sudostroenie, 1988, 255p. (Pertinent p.219-228), In Russian. 98 refs.
Gershanik, V.I.
Icebreakers, Ice navigation, Models, Computerized simulation, Propellers, Propagation, Electric power.

42-4302
Little Ice Age.
Grove, J.M., New York, Methuen & Co., 1988, 481p., Refs. p.422-481.
Glaciers, Paleoclimatology, Sea ice, Ice sheets, Climatic changes, Mountains, Thermal regime.

42-4303
Advances in phase change heat transfer; Proceedings.
International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988, Beijing, China, International Academic Publishers, 1988, 712p., Refs. passim. For selected papers see 42-4304 through 42-4314.
Xin, M., ed.
Heat transfer, Phase transformations, Melting, Freezing, Meetings, Analysis (mathematics), Liquid solid interfaces.

42-4304
Stefan problem by Lagrange-Bürmann expansions.
Tokuda, N., International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.15-19, 21 refs.
Crystal growth, Stefan problem, Boundary layer, Analysis (mathematics).

42-4305
Heat pipe research and development in Western Europe.
Groll, M., International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.20-46, 58 refs.
Heat pipes, Heat transfer, Cold weather operation, Heat recovery, Solar radiation, Corrosion, Protective coatings, Cooling.

42-4306
Research and development of heat pipes in the countries of Eastern Europe.
Horváth, L., et al, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.47-66, 82 refs.
Polášek, F.
Heat pipes, Heat transfer, Permafrost beneath structures, Thermal properties, Design, Capillarity, Heat recovery, Wastes.

42-4307
Heat transfer and interface motion in the presence of subcooling for melting around a horizontal tube with and without axial fins.
Wang, Q.J., et al, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.350-355, 8 refs.
Li, W.Y.
Heat transfer, Ground thawing, Pipes (tubes), Phase transformations, Cooling, Experimentation, Thaw depth, Liquid solid interfaces.

42-4308
Heat transfer enhancement under frosting conditions.
Meng, F., et al, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.356-361, 9 refs.
Ma, H., Yue, D., Pan, Y
Heat transfer, Mass transfer, Ice formation, Hoarfrost, Tests, Phase transformations, Temperature effects, Sublimation, Water vapor, Electric fields.

42-4309
On the effect of the 4 C density maximum on melting heat transfer.
Yen, Y.-C., MP 2382, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.362-367, 15 refs.
Heat transfer, Ice melting, Ice water interface, Density (mass/volume), Convection, Analysis (mathematics).
The effect of the 4 C density maximum on heat transfer in a water layer formed by melting ice has been investigated. The anomalous density maximum of water at about 4 C has been attributed to the occurrence of a constant temperature region within the layer and has resulted in variable critical Rayleigh numbers dependent on both the warm boundary temperature and the direction of melting.

42-4310
Analysis of melting process of a phase change material at cavities with different orientation of heating.
Galaktionov, V.V., et al, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.368-372, 4 refs.
Ezerskiĭ, A.P., Ezerskiĭ, M.P.
Heat transfer, Melting, Phase transformations, Temperature effects, Mathematical models.

42-4311
Heat pipes for ground heating and cooling.
Vasil'ev, L.L., International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.473-477, 8 refs.
Heat pipes, Soil freezing, Heating, Cooling, Frozen ground strength, Soil stabilization, Underground storage, Heat sources, Solar radiation.

42-4312
Phase change heat transfer program for microcomputers.
Buzzell, G.M., et al, MP 2383, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.645-650, 22 refs.
Farag, I.H., Phetteplace, G.
Heat transfer, Phase transformations, Computer programs, Electric equipment, Freeze thaw cycles, Melting, Analysis (mathematics), Freezing, Latent heat.
The development of a microcomputer based finite element program featuring phase change (melting and freezing) simulation facilities is outlined. A closed form Galerkin finite element method derived from a delta function formulation of the latent heat discontinuity in the heat capacity versus temperature function is used within phase change elements of the solution domain. Storage reduction data structures are implemented and compared on the basis of overall program execution time. Analytical solutions for melting and freezing are used to verify program accuracy and to explore other simulation parameters such as time step size, mesh density and start-up technique. Several "life like" phase change simulations are compared to the results obtained from other numerical models; main frame and microcomputer performance based on execution time is tabulated for each of these cases.

42-4313
Boundary element method for predicting the motion of solid-liquid phase change interface.
Dong, Z., et al, International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.651-654, 7 refs.
Chen, Z., Wang, Q.
Liquid solid interfaces, Phase transformations, Heat transfer, Analysis (mathematics), Temperature gradients.

42-4314
Simplified analysis for freezing in phase change material with extended freezing temperature range.
Yu, Z., International Symposium on Phase Change Heat Transfer, Chongqing, Sichuan, China, May 20-23, 1988. Proceedings. Advances in phase change heat transfer. Edited by M. Xin, Beijing, China, International Academic Publishers, 1988, p.708-712, 11 refs.
Freezing, Phase transformations, Heat transfer, Analysis (mathematics), Solid phases, Temperature effects, Stefan problem, Thermal diffusion.

42-4315
Application of two theoretical melt water drainage models on Storglaciären and Mikkaglaciären, northern Sweden.
Holmlund, P., *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.1-7, 26 refs.
Meltwater, Glacial hydrology, Drainage, Glacial rivers, Models, Radio echo soundings, River flow, Seasonal variations, Bottom topography, Sweden.

42-4316
Basal ice and debris sequence at the margin of an equatorial ice cap; El Cotopaxi, Ecuador.
Knight, P.G., *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.9-13, 12 refs.
Glacial deposits, Glacier beds, Meltwater, Freezing, Moraines, Glacier flow, Ice edge, Equador—Cotopaxi.

42-4317
Interpreting the internal fabric of a rock glacier.
Giardino, J.R., et al, *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.15-25, 53 refs.
Vitek, J.D.
Rock glaciers, Glacier oscillation, Glacial deposits, Ice composition, Glacier flow, Ice mechanics, Talus.

42-4318
Giant ploughing block, Finse, southern Norway.
Reid, J.R., et al, *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.27-33, 34 refs.
Nesje, A.
Soil freezing, Soil water migration, Ground thawing, Frozen ground mechanics, Mass transfer, Thermal conductivity, Slopes, Frost action.

42-4319
Linear till ridges in the southern Norwegian-Swedish mountains—evidence for a subglacial origin.
Kleman, J., *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.35-45, 28 refs.
Glacial deposits, Paleoclimatology, Subglacial drainage, Glaciation, Mountains, Landforms, Sweden.

42-4320
Global survey of sediment yield.
Jansson, M.B., *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.81-98, 55 refs.
Sedimentation, Runoff, Erosion, Climatic factors, Statistical analysis.

42-4321
Late glacial hydrology of the upper Pite River Valley, Swedish Lapland.
Elfström, Å., *Geografiska annaler. Series A Physical geography*, 1988, 70A(1-2), p.99-123, 35 refs.
Glacial hydrology, Glacial rivers, Paleoclimatology, Drainage, Valleys, Climatic factors, Geomorphology, Glacial deposits, Talus, Sweden—Pite River.

42-4322
Instruments and methods of processing microwave radiometer measurements made by the Cosmos-1151 satellite.
Akvilonova, A.B., et al, Ocean research by remote methods, 1983?, p.114-120, 12 refs. Translated from Issledovanie okeana distantsionnymi metodami, Sevastopol', Morskoĭ gidrologicheskiĭ institut, 1981, p.123-130. [GC10.4.R4I84 1981].
Radiometry, Microwaves, Remote sensing, Spectroscopy, Oceanography.

42-4323
Some results of Arctic ice investigations by the Cosmos-1151 satellite.
Armand, N.A., et al, Ocean research by remote methods, 1983?, p.128-133, 7 refs. Translated from Issledovanie okeana distantsionnymi metodami, Sevastopol', Morskoĭ gidrologicheskiĭ institut, 1981, p.139-144 [GC10.4.R4I84 1981].
Egorov, S.T., Kurskaia, A.A., Kutuza, B.G.
Sea ice distribution, Remote sensing, Microwaves, Radiometry, Pack ice, Ice conditions, Polarization (waves), Brightness.

42-4324
Microwave measurement of the mass of frozen hydrogen pellets.
Talanker, V., et al, *Review of scientific instruments*, July 1988, 59(7), p.1085-1087, 4 refs.
Greenwald, M.
Hydrogen, Freezing, Mass balance, Microwaves, Measuring instruments.

42-4325
Wind erosion and climatic changes. Comments on the ecological crisis of Skane during the 18th century. [Vinderosion och klimatändringar. Kommentarer till 1700-talets ekologiska kris i Skåne].
Mattsson, J.O., *Svensk geografisk årsbok*, 1987, No.63, p.94-108, In Swedish with English summary. 27 refs.
Climatic changes, Wind erosion, Soil erosion, Agriculture, Landscapes, Temperature effects, Statistical analysis, Sweden—Skane.

42-4326
Extent of snowpack influence on water chemistry in a North Cascades lake.
Loranger, T.J., et al, *Water resources research*, May 1988, 24(5), p.723-726, 9 refs.
Brakke, D.F.
Meltwater, Water chemistry, Snow cover effect, Runoff, Lake water, Ions.

42-4327
Colors of glacier water.
Ass, E., et al, *Water resources research*, Apr. 1988, 24(4), p.561-565, 13 refs.
Bogen, J.
Glacial rivers, Suspended sediments, Meltwater, Water chemistry, Optical properties, Particle size distribution, Spectroscopy, Analysis (mathematics).